Improving governance of marine protected areas in Tasmania, Australia

by

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Statement and declarations

Declaration of originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any tertiary institution, and to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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Abstract

Marine ecosystems provide a variety of benefits to humans, including nature-based tourism, food production, and livelihoods for local people. Protected areas have been considered one of the most important tools to conserve biodiversity and ecosystem services. Under the *Convention on Biological Diversity*, state parties have pledged to establish comprehensive, representative and effective systems of marine protected areas (MPAs) by 2020. Over the past decades, Tasmania has made some progress in establishing a system of MPAs. However, in 2009 the process stalled following the contentious designation of MPAs in the Bruny Bioregion. The Tasmanian MPA system today covers almost six per cent of Tasmanian State Waters, but over half surrounds subantarctic Macquarie Island. Many Tasmanian marine bioregions are not adequately represented in the reserve system, and four bioregions have no MPAs. Governance plays a key role in the success of MPA designation and implementation. The aim of this thesis was to understand how MPA governance could be improved to enhance marine conservation in Tasmania. The specific research objectives were:

1. To analyse the core elements and context of the governance regime for Tasmanian MPAs.
2. To evaluate the extent that Tasmanian MPA governance regime follows good governance principles.
3. To assess power dynamics in the Tasmanian MPA governance regime and how they have affected the quality of governance.
4. To make recommendations for improving the Tasmanian MPA governance regime.
5. To draw out lessons from the Tasmanian case study that can inform the design of MPA governance regimes elsewhere and contribute to the literature on governance of natural resources.

I used a mixed methods approach to address these objectives, including a review of key documents, an Internet questionnaire, key informant semi-structured interviews, Social Network Analysis, and a media prominence analysis. The Tasmanian MPA governance regime was analysed against the following good governance criteria: 1) inclusiveness and fairness; 2) accountability and transparency; 3) legitimacy; and 4) performance.

Results indicated that consultation processes for the establishment of an MPA system in Tasmania could be considered inclusive. However, methods to engage key stakeholders could be improved to increase participation of certain actors and to provide opportunities for rational dialogue between different stakeholders. Statutory consultation processes were transparent, but the cumbersome legal framework led to fragmentation of management roles and responsibilities. MPA proposals have been based on good ecological information, but the use of socio-economic information has been limited.

The Tasmanian Government was generally accepted as the legitimate decision-maker, but there were low levels of trust. Of particular concern was the tendency of political interventions to privilege narrow sectoral interests and override outcomes from statutory consultation processes that were informed by wide stakeholder input. Direction, political leadership and coordination across sectors and government levels (Australian, State and local) were deemed unsatisfactory. MPA management was underfunded and not adaptive.

Power plays a key role in the performance of a governance regime, having both negative and positive impacts on collaborative resource management. Results indicated that influence was concentrated in relatively few actors, mostly members of the commercial and recreational fishing sectors, some government agencies, and the relevant Minister as the main decision-maker. An analysis of social structures in the information exchange network showed that polarisation was not as prevalent as was perceived by most participants, and that there were opportunities for instituting collaborative approaches to MPA designation and management. Relationships across sectors, however, currently depend on a few bridging organisations.

The recommendations arising from this research are framed around two complementary reform options. The first option, a collaborative approach to MPA governance, takes advantage of and builds on existing actor networks. The second option involves structural adjustment of the legal framework. Under the current circumstances, this legal change is unlikely, because for many years the Tasmanian Government has had little political will to advance the conservation of marine ecosystems. If, however, a collaborative initiative is successful, sufficient Government support could be mobilised to drive legislative reform. Findings and recommendations provide guidance for governance reforms that are likely to significantly improve the quality and effectiveness of MPA designation processes in Tasmania, and in similar jurisdictions elsewhere.

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List of abbreviations and acronyms

ABC:	Australian Broadcasting Corporation
ANZECC:	Australia and New Zealand Environment and Conservation Council
CBD:	Convention on Biological Diversity
CMR:	Commonwealth Marine Reserves
COMCOM:	Council of Nature Conservation Ministers (Australian and state governments)
CSIRO:	Commonwealth Scientific and Industrial Research Organisation
DEP:	Derwent Estuary Program
DPIPWE:	Department of Primary Industries, Parks, Water and Environment (previously Parks and fisheries were in different Departments)
EDO:	Environmental Defenders Office
ERGM:	Exponential random graph model
ET:	Environment Tasmania
FAC:	Fisheries Advisory Committees
FAO:	Food and Agriculture Organisation of the United Nations
IMAS:	Institute for Marine and Antarctic Studies
IMCRA:	Integrated Marine and Coastal Regionalisation of Australia (previously Interim Marine and Coastal Regionalisation of Australia)
IUCN:	International Union for Conservation of Nature
LMRMA:	Living Marine Resources Management Act 1995
MAST:	Marine and Safety Tasmania
MCA:	Marine Conservation Areas
MPA:	marine protected areas
NCA:	Nature Conservation Act 2002
NGO:	Non-government organisations
NPRM:	National Parks & Reserve Management Act 2002
NPWAC:	National Parks and Wildlife Advisory Council
NRM:	Natural Resource Management
NRSMPA:	National Representative System of MPAs
PWS:	Parks & Wildlife Service Tasmania
Recfish:	Australian Recreational and Sport Fishing Industry Confederation
SCAT:	Southern Coastcare Association of Tasmania
SCBOOT:	Sea Charter Boat Operators of Tasmania
SNA:	Social Network Analysis
TARFish:	Tasmanian Association for Recreational Fishing
TCT:	Tasmanian Conservation Trust
TMPAS:	Tasmanian Marine Protected Areas Strategy 2001
TPC:	Tasmanian Planning Commission (previously Resources Planning and Development Commission)
TRLFA:	Rock Lobster Fishermen's Association
TSIC:	Tasmanian Seafood Industry Council (previously Tasmanian Fishing Industry Council)
TSW:	Tasmanian State Waters
UTAS:	University of Tasmania

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Chapter 1 Introduction

1.1 Rationale

Marine ecosystems provide a large number of anthropocentric benefits, including nature-based tourism, food, protection from natural disasters and climate change effects, spiritual well-being and income generation. For example, with respect to tourism, global whale watching expenditures reached US$ 2.1 billion in 2008 (O'Connor *et al.* 2009), and global fisheries generated approximately US$217.5 billion in 2010 (FAO 2012). The economic value of healthy marine resources, however, is not limited to direct use values. Costanza *et al.* (1997) estimated that the value of services provided by marine ecosystems, such as nutrient cycling and disturbance regulation, could be more than US$ 20.9 trillion/year, most of which is unaccounted by traditional economic reporting. Some also believe that nature has intrinsic value and that humans have a moral duty to protect natural systems (Lockwood *et al.* 2012).

Unfortunately, marine ecosystems are under significant threat, both by anthropogenic influences and by natural phenomena. Direct threats include overexploitation of marine resources, pollution and habitat destruction, while indirect threats can originate from coastal development, land-generated pollution and climate change (MEA 2005a). Worboys *et al.* (2015) consider that a rapidly increasing human population and overconsumption constitute underlying phenomena driving an increasing negative impact of human development on marine ecosystems. Human activities often have cumulative and synergistic effects on ecosystem health, with associated loss of ecosystem services (MEA 2005b).

As such deterioration has become evident, the approach to governing and managing marine resources has changed significantly in the past decades, at the local, national and international levels. Multi-lateral organisations have promoted sustainable development (World Commission on Environment and Development 1987; United Nations 1997), better practices for fisheries management (FAO 1995), urged countries to adopt an ecosystem-approach to management (United Nations Convention on the Law of the Sea 2010; CBD Secretariat n.d.-b), and incorporated environmental goals in development plans (United Nations n.d.). Protected areas are considered one of the most important tools to conserve biodiversity (Dudley 2008), and a number of international agreements have urged countries to increase the protection of their territories. During several meetings of the *Convention on Biological Diversity* (CBD), parties

have established specific goals regarding marine and terrestrial protected areas; Aichi targets in particular, aim to reserve at least 17% of terrestrial areas and 10% of marine areas within the countries by 2020 (CBD Secretariat n.d.-a).

Under international pressure, the number of marine protected areas (MPAs) around the world has substantially increased since the establishment of the first global targets (Toropova *et al.* 2010). Despite evidence for benefits from MPAs for biodiversity outcomes (e.g. Edgar *et al.* 2014) and the socio-economic conditions of local people (e.g. Russ *et al.* 2004), the designation of MPAs has been problematic. In some cases, MPAs have reduced the income of commercial fishers, displaced fishing effort (Hilborn *et al.* 2004), or infringed on indigenous groups rights (Borrini-Feyerabend *et al.* 2004). Inappropriate understanding of conservation science, as well as misconceptions and short-term interests of opposing groups have also affected the acceptance of MPAs (Agardy *et al.* 2003). These factors, added to limited stakeholder involvement, have triggered significant opposition to the establishment of MPAs in different parts of the world. For example, in California, the process of establishing an MPA network was delayed several years after strong opposition from key stakeholders (Weible 2008).

Governance has been highlighted as one factor that contributes to the effectiveness of protected areas (Borrini-Feyerabend *et al.* 2012; Borrini-Feyerabend *et al.* 2013). In this thesis, governance will be understood as "a process whereby societies or organizations make their important decisions, determine whom they involve in the process and how they render account" (Graham *et al.* 2003 pg 1). A governance regime involves protocols that are institutionalised either formally or informally (James 2007). Several types of governance regimes have been identified, ranging from governance by government, shared governance, private governance and governance by indigenous or local communities (Borrini-Feyerabend *et al.* 2013). In a top-down regime, until recently the dominant approach to resource management, governments are responsible for decisions (Dietz *et al.* 2003). However, top-down governance approaches have often been ineffective to manage common-pool resources (Ostrom 1990; Delmas and Young 2009b).

Alternative governance regimes have been proposed, where actors other than governments have a role to play (Delmas and Young 2009a), or where the role of states, markets and people are combined (Jones *et al.* 2013). Different actors including industry, communities and users, have become part of the process of decision-making and implementation of decisions (Lemos and Agrawal 2006). Markets (Lyon 2009), community self-regulation (Ostrom 1990; 2010) and various forms of collaborative, multi-level and polycentric governance have been proposed as plausible alternatives to unilateral governance by governments.

The choice of governance arrangements influences the level of success of an MPA system (Weible 2008). Through a series of case studies, Sabatier (1986) identified statutory variables that affect implementation including: clear objectives, appropriate resources and effective compliance mechanisms. External variables can affect implementation, such as socio-economic conditions, public support and commitment of implementing officials.

Regardless of the type of governance, a series of principles of good governance have been proposed, both to improve effectiveness and to respect fundamental rights (UNDP 1997; European Commission 2001; Lockwood 2010; Lockwood *et al.* 2010; Borrini-Feyerabend *et al.* 2013). The most salient principles include: participation, inclusiveness, dialogue, equity, fairness, accountability, transparency, legitimacy, integrity, direction, integration, coordination, effectiveness and adaptability (UNDP 1997; European Commission 2001; Lockwood 2010; Lockwood *et al.* 2010; Borrini-Feyerabend *et al.* 2013). Disregarding these principles can have significant consequences for the outcomes of a planning process. For example, in Florida Keys National Marine Sanctuary, the process of zoning left stakeholders feeling alienated or with misconceptions about the consequences of establishing reserved areas (Suman *et al.* 1999). These authors suggest that better involvement of stakeholders and information dissemination could have improved the outcomes of the process. In contrast, there are examples where good participation methods have increased transparency and commitment of local communities, as in the case of Fiji, ultimately reducing operative costs of management (Tawake *et al.* 2001).

Several authors have highlighted the importance of governance quality and power structures in the success of environmental governance, supported either by empirical research or theoretical argument (Forester 1989; Chambers 1994; Raik *et al.* 2008; Armitage *et al.* 2009; Lockwood 2010; Neal and Neal 2011; Borrini-Feyerabend *et al.* 2013). Power and influence are understood throughout this thesis as the capacity of an actor to affect the actions of others in an intended and calculated way (Wrong 1979). As discussed in Section 2.5, theoretical developments of power tend to be complementary, as they describe different aspects of power. Foucault's theory of power departs from the majority of theories that recognise agency in the exertion of power. Foucault posits that power is embedded in the system and is not exerted by specific groups or individuals (Gaventa 2003). In this thesis I assumed that power was found both in social systems as a whole, as described by Foucault, but I also recognised that certain actors can choose to exert power over others. Methods and analyses are focused on theories that recognise agency of individuals or groups, namely the identification of influential actors, sources of power and social structures that empower specific actors.

The distribution of power among key stakeholders in a governance regime can have important consequences on the quality and outcomes of a planning process (Forester 1989; Chambers 1994; Raik *et al.* 2008; Armitage *et al.* 2009; Neal and Neal 2011). For example, participation in a process can be affected by psychological or political oppression of powerful groups (McCullum *et al.* 2004; Prilleltensky 2008). Kapoor (2002) suggested that simplified concepts of "the local" can ignore important power imbalances that affect fairness in a participatory process. The exercise of power in decision-making is often covert, compromising the transparency of decisions. Lobby capacity varies substantially among different stakeholders, affecting their level of influence over decisions and increasing thus unfairness (Sklair 2002). Power structures, however, are often overlooked in planning processes (Lane and McDonald 2005). Understanding power dynamics is necessary to devise methods to overcome such problems.

Power, however, is not necessarily negative in governance processes. In fact, key elements of successful governance, such as knowledge, leadership, coordination and brokerage, depend on the existence of power structures. For example, knowledge is inextricably linked to power (Faubion 2000; Kapoor 2002; Gaventa 2003), and knowledge is a key element of adaptive management and planning (Gunderson and Holling 2002; Olsson *et al.* 2004; Berkes 2009; Lockwood *et al.* 2012). Leadership has been identified as a key requirement for adaptive planning and management of natural resources (Ansell and Gash 2008; Gutiérrez *et al.* 2011; Lockwood *et al.* 2012). For example, Wescott (2006) suggests that the leadership of nongovernment organisations (NGOs) and some bureaucrats and politicians were important factors in the successful establishment of the MPA system in Victoria, Australia. Coordination and brokerage can improve collaborative processes (Gunderson and Holling 2002; Cash *et al.* 2006; Long *et al.* 2013). In this way, power can have both negative and positive impacts on governance quality, and outcomes depend on the motivations and interests of powerholders.

Australia has been recognised for a leading role in MPA management (Bellwood *et al.* 2004; MEA 2005a) and fisheries management (FAO 2012). Australia committed to creating a National Representative System of MPAs (NRSMPA) in 1992, making steady progress for several years. The Great Barrier Reef Marine Park is one of the most widely known MPAs, both for its global ecological significance (UNESCO 2014), and for its innovative governance system (Olsson *et al.* 2008; Day 2016). In 2013, Australia announced that it had established the largest MPA system of the world, exceeding the 10% Aichi target. This announcement overlooked the fact that it was not a representative system, as it covered mostly offshore waters with significant conservation gaps on the continental shelf (Barr and Possingham 2013). The Barr and Possingham (2013) analysis was limited to marine areas under the jurisdiction of the Australian

Government, namely offshore waters. The analysis, however, excluded coastal waters under the jurisdiction of states and the Northern Territory, which are under significantly larger anthropocentric pressure and might hold more diversity value. These coastal waters have been subject to a diversity of processes in relation to designation of MPAs, with substantial variation evident in their governance and management arrangements and the extent to which they are representative of marine biodiversity (Wescott 2006; Clarke 2016; Edyvane and Blanch 2016; Kriwoken 2016; Ogilvie 2016; Thomas and Hughes 2016; Wescott 2016).

Tasmania, in particular, made some initial progress to establish a representative MPA system in the early 1990s, and then in the 2000s (see Section 4.4 for details). As described in Section 4.7, eight mesoscale bioregions were identified around Tasmania: Boags, Central Bass Strait, Otway, Franklin, Davey, Bruny, Freycinet, Flinders and Twofold Shelf. Additionally, Tasmania has jurisdiction over the coastal waters around sub-Antarctic Macquarie Island (IMCRA 1998). After developing the Tasmanian MPA Strategy (TMPAS) (Marine and Marine Industries Council 2001), the Tasmanian Government decided to work one bioregion at a time. After making progress in two bioregions in the early 2000s, the process of establishing an MPA system stopped altogether in 2009, after a contentious designation of MPAs in the Bruny Bioregion. Excluding Macquarie Island, the Tasmanian MPA system covers fewer than three per cent of Tasmanian State Waters (TSW), and four bioregions have no representation (Kriwoken 2016). This is a marked contrast to MPA progress in other states and Commonwealth waters – a fact that motivated this investigation, and my focus on understanding the role of governance and power in MPA establishment.

I posit that issues with governance quality and power structures are partly responsible for the current stagnation in the establishment and implementation of the Tasmanian MPA system. Governance issues around Tasmanian MPAs have received limited attention in academic documents (Hislop; Stump and Kriwoken 2006; Lockwood *et al.* 2013; Kriwoken 2016). In particular, few studies refer the effect of power structures on governance performance. This thesis thus aims to understand how the Tasmanian marine governance regime affected the process of establishing an effective MPA system, and how that governance regime could be improved to enhance marine conservation. With this study, I will explore governance quality and the effect of power structures in the Tasmanian MPA governance regime. The results of this thesis provide guidance on how to improve the Tasmanian MPA governance regime and elsewhere.

1.2 Thesis aim and objectives

The general aim of this thesis was to understand how MPA governance could be improved to enhance marine conservation. The scope of this research was limited to Tasmanian State Waters and the governance regime at the State level. The following objectives were developed to provide more specific indication of the purposes of the research:

1. To analyse the core elements and context of the governance regime for Tasmanian MPAs.
2. To evaluate the extent that the Tasmanian MPA governance regime follows good governance principles.
3. To assess power dynamics in the Tasmanian MPA governance regime and how they have affected the quality of governance.
4. To make recommendations for improving the Tasmanian MPA governance regime.
5. To draw out lessons from the Tasmanian case study that can inform the design of MPA governance regimes elsewhere and contribute to the academic literature.

1.3 Chapter outline

Chapter 2 explores the concept of governance in the academic literature and its importance for conservation management. After identifying specific governance issues for the marine environment and MPAs in particular, I review the role that participation plays in governance. I then analyse the different aspects of power in decision-making, and the theoretical development of Social Network Analysis. This review makes a significant contribution to power theoretical development, by questioning the emphasis on negative aspects of power and disregarding its need in society functioning.

Chapter 3 explains the research design and methods of inquiry chosen to answer the objectives of the study. I start by situating this study in the pragmatic research paradigm. I then develop the analytical framework used to structure the inquiry, and explain the rationale behind the case study selection. The chapter finishes by describing the inquiry methods used to answer each of the research objectives. I propose a novel approach to understanding governance issues that might interfere with outcomes of MPAs and particularly to dealing with the issue of power dynamics in governance.

Chapter 4 situates the case study, following the structure of the analytical framework developed in Chapter 3. I use documentary sources and empirical data to analyse key components of the Tasmanian MPA governance regime: legal and policy framework, actors, decision arenas and problems that the regime needs to address. Likewise, key influences of the regime are described including: political context, socio-economic and cultural context, and natural context.

Chapter 5 focuses on applying principles of good governance identified in the literature to the Tasmanian MPA regime. Using qualitative results from interviews and questionnaires, I analyse the regime in terms of inclusiveness and fairness; accountability and transparency; legitimacy; and performance. These results are discussed in relation to the various processes used in the development of the Tasmanian MPA system. This discussion explores how performance in relation to each of the good governance criteria interacted in the Tasmanian case, emphasizing the interdependencies.

Chapter 6 uses the results from interviews and questionnaires to analyse both positive and negative aspects of power structures in the governance regime. In the first sections, I describe the hierarchy of different actors, and then analyse how uneven power distribution has affected governance of MPAs. A related issue, the polarisation of opinion, is also described for the Tasmanian case. I finish this chapter by analysing social structures that can enable improved coordination and collaboration between different actors.

Chapter 7 discusses the results of previous chapters, highlighting the interdependence between good governance principles and the existence of power structures. I use relevant literature to compare and contrast the Tasmanian case with empirical and theoretical studies in other parts of the world. The analysis explores causes and consequences of governance quality; power structures that advance particular interests; polarisation; reduced trust; the existence of common ground between different actors; and power structures that advance common interests. The final section highlights relevant contributions to the governance literature.

Chapter 8 demonstrates to what extent the methods and results of the thesis answer the research objectives, discussing also limitations of the selected inquiry methods. I then explain the significance of my findings and their contribution to the literature, suggesting future research that can address limitations and build on my findings. I conclude by making specific recommendations to improve the MPA governance regime in Tasmania, most of which can be generalised to improve governance regimes elsewhere.

Chapter 2 Power struggles in marine conservation: A review of participation and power dynamics on governance of marine protected areas

2.1 Introduction

Human life depends on the oceans due to the wide range of direct and indirect benefits or ecosystem services derived from marine and coastal environments (MEA 2005b). Protected areas are one of the most important management tools to safeguard regions that have key biodiversity elements and provide ecosystem services. According to the International Union for Conservation of Nature (IUCN) protected areas are a:

> [c]learly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (Dudley 2008).

The IUCN definition of protected areas can range from strict no-take areas to culturally modified landscapes or seascapes. The definition, however, can exclude important areas for conservation, such as fisheries management areas or indigenous territories where nature conservation might not be the main or specified priority. For example, it is still unclear if the Locally Marine Managed Areas of the Pacific islands would be classified under the IUCN definition, as livelihood conservation is their main objective, rather than nature conservation (Govan *et al.* 2009a). Other terms have been used to include these areas that do not strictly match IUCN's definition, such as Marine Managed Areas (Baird *et al.* 1999), Community Conserved Areas (Kothari 2006) and Indigenous and Local Communities Protected Areas (Borrini-Feyerabend *et al.* 2004) and other effective area-based conservation measures (CBD Secretariat n.d.-a)

Human activities are interconnected to ecosystems, as they depend on the provision of ecosystem services, and at the same time affect the capacity of ecosystems to provide those services (Ranganathan *et al.* 2008). These benefits have been categorised as *supporting, provisioning, regulating and cultural services* (MEA 2005b). Several studies have shown concrete benefits from MPAs, such as improved biodiversity, organism size and density (Edgar and Barrett 1999; Russ *et al.* 2003; Lester *et al.* 2009), and increased fisheries catch surrounding MPAs (Roberts *et al.* 2001; Gell and Roberts 2003; Russ *et al.* 2003; Claudet *et al.* 2006). Healthy ecosystems can also support a nature-based tourism industry (Lindberg *et al.* 1996).

However, to be effective MPAs need to be managed such that the values and range of services provided by specific ecosystems are maintained or enhanced (Lester et al. 2009). Overall effectiveness is determined by: the understanding of the context and an appropriate design to achieve both ecological and social objectives; strategic planning and implementation of ecological and social objectives; the availability of necessary resources and skills; and a governance scheme that fits the local circumstances and ultimately serves to achieve expected outcomes (Hockings *et al.* 2006). There is a complex interaction between natural values and different users. MPAs can only be effective if governance systems are fit for purpose across national, sub-national jurisdictional and local scales. A supporting legal framework and good governance quality are necessary elements for tailored governance arrangements. The following sections will examine in more detail the concept of governance, and the consequences of participation, governance quality and distribution of power on MPA designation and management.

2.2 The importance of governance in conservation

During the past few years, use of the term "governance" has increased substantially in several contexts, from official documents, to political discourses and the academic literature. A search of "governance" in 2013 in the academic database Web of Knowledge (now Web of Science) showed an increase of more than fifty times from 1970-1989 to 1990-2009. The term is now widely used in a range of disciplines including government studies, public administration, economics, political science, and environmental science.

The meaning of "governance", however, can be hazy, and in different fields, governance has had various interpretations. While it was originally used as a synonym of government, more recently, it has referred to: the steering of complex organisations (corporate governance); a tool for political transformation according to modern Western ideology; and a "replacement mechanism" of a weakening state or unfair decision-making process (Hufty 2011). In this review, governance will be understood as the process by which different government and nongovernment actors make decisions, establish who is involved, and how they are held accountable (Graham *et al.* 2003).

The top-down or command-and-control paradigm, in which governments have sole responsibility for decisions, has dominated environmental governance (Dietz *et al.* 2003). Under certain circumstances, this approach has been effective. Through a series of case studies, Sabatier (1986) identified statutory variables that affect implementation, including clear

objectives, appropriate resources and effective compliance mechanisms. This author also mentions external variables that can affect implementation, such as socio-economic conditions, public support and commitment of implementing officials.

A top-down approach, however, has often failed to solve common-pool resource management and other environmental problems (Delmas and Young 2009b). This limited efficacy has reduced confidence in the government as the main actor, triggering a variety of new governance arrangements, where different actors have a role (Delmas and Young 2009a). Today corporations, nongovernment organisations and communities are increasingly involved in the management of the environment (Lemos and Agrawal 2006). Even single-actor mechanisms are dependent on the support of other actors (Lemos and Agrawal 2009). Markets (Lyon 2009), community self-regulation (Ostrom 1990; 2010) and various forms of collaborative, multi-level and polycentric governance have been proposed as plausible alternatives to failing top-down governance.

Each governance approach has both advantages and disadvantages. Market mechanisms can be effective when they take advantage of potential benefits for private actors. For example, eco-certifications can help both reduce environmental impact and improve profits (Lemos and Agrawal 2009). Other mechanisms, like the Clean Development Mechanism to reduce carbon emissions, have had an uneven distribution of benefits (Hultman 2009) and can have negative impacts on biodiversity (Bradshaw *et al.* 2013). In the same way, under certain circumstances, community-based governance has proved a better fit to local needs and circumstances than top-down arrangements (e.g. Govan *et al.* 2009b; García *et al.* 2014). Bottom-up approaches are not devoid of problems. Their success depends on the scale of the problem, enabling legal framework and institutions, enforcement capability, a system of conflict resolution and the recognition of inequalities and power distribution (Ostrom 1990; Lane and McDonald 2005; Delmas and Young 2009a; Levine and Richmond 2014).

Nested and polycentric institutions have been advocated to deal with multiscale common pool resources (Ostrom 2010), where ecological, social and jurisdictional boundaries seldom match each other. Polycentric governance refers to a number of decision-making centres, which are partly independent of each other. These are nested, when smaller institutions or organisations are part of larger institutional layers. Gruby and Basurto (2014) explain how these two concepts are not necessarily complementary. Analysing the process of scaling up marine conservation in Palau, these authors posit that nesting institutions to coordinate a national-level system of MPAs has come at the expense of the autonomy of resource-users. In this way, governance has become

more centralised, losing some of the advantages of polycentric institutions, such as fitness for local circumstances and innovation potential.

Any governance regime has advantages and disadvantages. The set of mechanisms to improve performance is determined by specific conditions (see Chapter 3 and Figure 3.1 for a list of conditions considered important in this study). Ostrom and colleagues (2007) criticise a widespread use of "panaceas", or universal solutions to natural resource management. On their own, government control, privatisation or collaborative management, have been frequently unsuccessful. It can be more appropriate to develop a combination of governance mechanisms tailored to fit specific circumstances (Delmas and Young 2009a).

In the case of protected areas, governance has been broadly classified according to the level of involvement of different actors (Borrini-Feyerabend *et al.* 2013). *Governance by government* refers to schemes where the national, subnational or local government is in charge of a protected area. This is the most widespread approach to designation, planning and management of protected areas, particularly in the marine environment (Borrini-Feyerabend *et al.* 2013).

Shared governance involves two or more actors in the decision-making process. Actors sharing governance include: two or more governments; two or more bodies of government (including at different levels); government and local communities; government and corporations; government and NGOs; and a combination of government, corporations, NGOs and local communities (Borrini-Feyerabend *et al.* 2013). For example, in the case of transnational parks, like La Amistad, a formal arrangement between the governments of Panama and Costa Rica provides for the conservation of a shared ecosystem (UNESCO 2013). Another example can be found in Colombia, where two authorities - National Parks and Indigenous Authorities – are required to established a joint management system of overlapping areas; this is necessary because both have the same level of authority and cannot make planning decisions without the other party's approval (Laborde 2007). In Australia, recent legal reform has improved participation of Indigenous communities in the governance and management of protected areas (Smyth and Isherwood 2016). Although a few examples exist in the marine realm, further work is needed in other states to enhance the participation of Indigenous groups in the governance of MPAs (Ross *et al.* 2009). Borrini-Feyerabend *et al.* (2013) provide two examples of shared governance in MPAs between government and local communities: Bunaken National Park in Indonesia and Apo Island Protected Landscape and Seascape in the Philippines. Some important conditions for their success include a supporting legal framework, active participation of local communities, and respect of customary rights.

Private governance can be undertaken by an individual, a corporation or an NGO. This type of governance is rare in marine ecosystems, but an innovative approach to marine area leases, which are traditionally used for exploitation purposes, can be a valuable tool for conservation (Beck *et al.* 2004). These authors caution against possible negative impacts, such as resentment of traditional users, and increased prices due to higher demand. In another example, Chile has developed a legal framework that supports private management and conservation of marine resources (Fernández and Castilla 2005).

In *community governance*, the rights of local or indigenous communities, usually to govern common pool resources, have been recognised and they are in charge of making major decisions. Either their whole territory or part are protected or managed sustainably. These areas are not necessarily accepted by government as part of their national system of protected areas. As previously mentioned, the definition of protected area by IUCN is restricted to areas "dedicated to the protection and maintenance of biological diversity" (Dudley 2008). As many communities do not designate their areas with the specific purpose of biodiversity conservation, several areas around the world are not recognised as protected areas by international standards (Borrini-Feyerabend *et al.* 2004). Such areas can nevertheless significantly contribute to conservation. Many examples of terrestrial protected areas governed by local and indigenous communities are found around the world. These are less common in the marine environment, MPAs being usually under the jurisdiction of governments. Even in places like Fiji, where a large system of traditional locally managed marine areas has been established (Govan *et al.* 2009a), legal gaps still limit official support (Techera and Troniak 2009).

Neoliberalism has had considerable impact on environmental governance around the world. This widely adopted economic philosophy promotes free-market policies and de-regulation to improve functioning of markets. Today, most environmental policies contain elements that can be traced back to the neoliberal rationality, including the commodification of nature, privatisation of natural resources and territories, environmental services markets, austerity in public agencies, and delegation of public responsibilities to the private sector or local communities. Neoliberalism has had both negative and positive impacts, as discussed by Liverman and Vilas (2006). There are varied views about the impact of neoliberal approaches to conservation. It can be argued that privatisation and commodification increase efficiency, but these processes can also lead to unequal distribution of costs and benefits (Igoe and Brockington 2007). In some cases, however, it has enhanced democratic political systems, by recognising property rights of traditional users and by decentralising decision-making (Liverman and Vilas 2006).

The proliferation of different governance modes has prompted the need to establish guidance to improve the quality of governance, regardless of type. Good-governance principles have been adopted widely in documents and discourses at international levels (UNDP 1997; European Commission 2001; Graham *et al.* 2003; Lockwood 2010; Lockwood *et al.* 2010; Borrini-Feyerabend *et al.* 2012; Borrini-Feyerabend *et al.* 2013). Table 2.1 indicates four broad criteria for good governance and related concepts identified in the literature.

Table 2.1 Good-governance criteria in relation to concepts discussed in the literature

Good governance criteria	Related concepts in the literature
Inclusiveness and fairness Direct or indirect participation of stakeholders, especially disadvantaged groups Respect of rights, different points of view and diversity of cultures. Appropriate communication ways Dialogue and conflict resolution Unbiased decision making Fair sharing of costs and benefits	Participation (1, 2) Voice (3, 6, 7) Inclusiveness (4, 5) Rule of law (1, 3) Equity (1, 3, 6, 7) Fairness (3, 4, 5, 6, 7) Consensus (1, 3, 6, 7)
Accountability and transparency Clear allocation of roles Clear procedures for decision making Responsible bodies answer for outcomes and consequences Available information about who, how and the justification of decisions	Accountability (1, 2, 3, 4, 5, 6, 7) Transparency/openness (1, 2, 3, 4, 5, 6, 7)
Legitimacy Authority conferred by law or customary rule Earned legitimacy through stakeholder support or strong links with the region Integrity Subsidiarity Evidence-based decisions Commitment to action of responsible actors	Legitimacy (3, 4, 5, 6, 7) Subsidiarity (2, 4, 5, 6, 7) Integrity (4, 5)
Performance Long-term vision in accordance with relevant policies and MPA management plans Appropriate strategic and operational planning Social, economic and ecological aspects considered in decisions. Appropriate skills and resources available Efficiency and effectiveness in management of natural resources Resilience of social-ecological systems Coordination and integration of governance and management	Performance (3, 6, 7) Direction and strategic vision (1, 3, 4, 6, 7) Connectivity/ coherence/ integration (2, 4, 5, 7) Capability/ capacity (2, 5, 6, 7) Responsiveness (1, 3, 7) Effectiveness and efficiency (1, 2, 3, 6) Resilience/adaptability (4, 5, 6, 7)

Numbers indicate the following sources: 1. UNDP (1997); 2 European Commission (2001); 3. Graham *et al.* (2003); 4. Lockwood (2010); 5 Lockwood *et al.* (2010); 6. Borrini-Feyerabend *et al.* (2012); 7 Borrini-Feyerabend *et al.* (2013).

The following section describes in detail each criterion:

a) *Inclusiveness and fairness* – These two principles are closely related, because decisions can only be fair if the needs of all stakeholders are included in the decision process, especially

minorities and marginalised groups. Either direct or indirect participation is necessary to account for different stakeholders' positions. Some authors, like Smith and McDonough (2001), believe that fairness is more important than participation mechanisms. This is particularly important considering that a process can be unfair even with a high level of participation, particularly if unbalanced power structures are in place. This is further discussed in Section 2.7.

The equitable sharing of costs and benefits is mentioned by several authors, but this is a problematic concept, as in most cases, decisions will leave some stakeholders better off than others (Lockwood 2010). For example, if the development of tourism infrastructure in an MPA requires substantial financial investment, local investors might not have the chance to compete against a large developer. For this reason, final decisions should openly balance different interests, rights, benefits and costs. If decisions are not completely fair, this should be recognised and if appropriate, those disadvantaged could be compensated (Lockwood 2010).

Another key aspect of participation is the involvement of stakeholders from the beginning and throughout the process, rather than being limited to particular stages (Reed 2008). Methods used to implement participatory governance approaches need to be appropriate for the specific settings, including options to facilitate the participation of marginalized sectors of the population (Chambers 1994; Reed 2008; Lockwood *et al.* 2010).

b) *Accountability and transparency* – Although closely linked and complementary, accountability and transparency need to be considered separately in the design or assessment of a governance system, as transparency does not necessarily result in accountability (Lockwood 2010). Transparency calls for clear procedures, availability of relevant information, open justification of decisions and clear allocation of roles. It involves open access to all stakeholders about how, who and why decisions are made and includes reporting of accomplishments and challenges (Lockwood *et al.* 2012). Transparency is necessary on ethical grounds, given the right of stakeholders to information about decisions that affect them (Lockwood 2010). Transparency is also closely related to accountability, as responsible bodies should have transparent procedures and decision-making processes. Accountability refers to the establishment of clear roles; the allocation of responsibilities to specific organisations or bodies; the acceptance and fulfilment of those responsibilities. Responsible actors usually need to answer for their actions, achievements and failures to their constituencies and to higher levels of governance (Lockwood 2010).

c) *Legitimacy* – Legitimacy is mainly understood as official authority given or conferred by legal mandate, but other forms of legitimacy are many times disregarded. For example, legitimacy can be gained by support of stakeholders (Lockwood 2010; Borrini-Feyerabend *et al.*

2013), or by the long-term link of indigenous people to their territories (Lockwood 2010). Either ancestral or legal legitimacy can be in place, but the recognition and support of the stakeholders is crucial in either case. Only with this support is it possible to consider that this principle has been fulfilled. Recognition, in turn, can come from different sources. An authority can be accepted because it is taken for granted (Bachrach and Baratz 1962), because of its capacity to bring about positive changes (Lockwood *et al.* 2010), or if a leader is highly charismatic or considered an expert in a specific field (Forsyth 1999). Decisions supported by robust evidence - ecological, cultural and socio-economic - also increase their legitimacy. In particular, performance evidence has been used increasingly to legitimise policies (Sanderson 2002).

Subsidiarity refers to the allocation of authority and responsibility to the level closest to the issue. Before devolving responsibility, however, it is necessary to consider the capacity and relevance of the entity. In a devolution process, responsible actors should have the mandate to deal with MPA decisions at that level, and the capacity to do so, including funds and skills (Lockwood *et al.* 2010). While legitimacy may increase when responsible entities are closer to actors affected by decisions, poor implementation of a decentralisation process can in fact reduce legitimacy (Stoker 1998).

Performance – Management refers more to actions and means to fulfil specific objectives, while governance refers to the process of making decisions, including who and how (Borrini-Feyerabend *et al.* 2013) . Performance is more often used to describe management processes rather than governance. Management and governance, however, are closely linked, and criteria like efficiency and effectiveness, are equally important in both cases. Other issues that affect governance performance include long-term vision and direction; connectivity and coherence; capacity; and resilience and adaptability (UNDP 1997; European Commission 2001; Graham *et al.* 2003; Lockwood 2010; Borrini-Feyerabend *et al.* 2012; Borrini-Feyerabend *et al.* 2013; Lockwood *et al.* 2013).

Efficiency in governance refers to the optimal use of funds, prioritising decisions to be discussed and the means to do it. For example, face-to-face meetings can be costly, so these can be alternated with other discussion mechanisms such as online forums. Long-term vision and direction are fundamental to guide planning, management and governance arrangements. Strong leadership is a fundamental skill to generate and maintain a common vision, to secure the necessary support and resources for effective management, and for facing change (Borrini-Feyerabend *et al.* 2012). Connectivity and coherence refer to the integration of policies across different levels of governance and sectors. Capacity is closely related to management

effectiveness, but it is relevant to governance because relevant actors need to make decisions to provide or enhance capacity of responsible bodies. Resilience has been defined as the capacity of a linked social-ecological system to withstand and adapt to change (Gunderson and Holling 2002). On-going evaluation and adjustment of the governance system needs to be balanced to avoid excessive changes, but to allow the flexibility necessary to be resilient to emergent issues (Lockwood 2010). This evaluation should be part of an overall MPA effectiveness, as the purpose of governance is to improve MPA outcomes and not a goal in itself. Coordination across governance levels, coherence of policies and direction, and integration across sectors are considered key requirements for effective and resilient governance regimes (European Commission 2001; Lockwood 2010; Lockwood *et al.* 2010; Lockwood *et al.* 2012; Borrini-Feyerabend *et al.* 2013).

Classification of principles of good governance is useful for analytical purposes, but these need to be considered in an integrated fashion. Principles can be closely linked; for example if a process is not fair and transparent, it can lose legitimacy before key stakeholders. Principles can also compromise each other, as in the case of lengthy consultation processes that reduce efficiency in the decision-making process.

2.3 Governance issues for MPAs

MPAs in particular have challenges that are not found in terrestrial areas. Marine ecosystems have a higher connectivity than terrestrial ecosystems, hindering the establishment of clear boundaries between different habitats, and between terrestrial and marine ecosystems. Traditional cultures such as coastal communities in Fiji (Govan *et al.* 2009a), do not establish a rigid divide between terrestrial and marine resource management. In contrast, many governments typically establish such divisions in mapping the coastline, locating jurisdictional boundaries and defining associated planning and management systems. These artificial divisions have shaped the spatial management of marine and coastal activities and are often reflected in the institutional arrangements, with governance and management agencies often having responsibilities that are limited to a particular sector or to a political jurisdiction that ignore natural connectivity. Such arrangements can lead to problems for system-wide coordination (Underdal 1980; McLeod and Leslie 2009).

Marine ecosystems are linked to terrestrial habitats and anthropogenic activities that occur inland or on the coast. This connectivity is seldom matched by governance and management levels within a country or between countries (Karkkainen 2002). For example, pollution from

cities, agriculture and industries in the upper part of a river can have major impacts on an MPA (Cicin-Sain and Belfiore 2005). If that river crosses several countries, the reduction of pollution would require coordination between local and national government agencies, between the polluting countries and the affected country, and across different sectors, like polluting industries, solid waste management agencies and MPA managers (Haas 1989). Even in cases where coordination across levels of government is in place, like in the Great Barrier Reef, key threats are originated beyond the limits of MPAs (Day 2016). Another clear case is the management of highly migratory species, which necessitates the coordination between different countries to ensure sustainability (Stokke 2000). Consequently, MPA governance cannot be undertaken in isolation (Toropova *et al.* 2010), increasing the complexity of management and governance.

The public nature of the sea often results in an open-access exploitation of resources, which can lead to "the tragedy of the commons" if it is not privatised or controlled by the state (Hardin 1968). Evidence from several case studies have challenged the limited options proposed by Hardin (Ostrom 1990; Basurto 2008; Cinner *et al.* 2012a), and a variety of novel governance tools have emerged to counter this problem (Delmas and Young 2009a). New arrangements are being implemented around the world, such as community-based management (Kothari 2006), private-public partnerships (Jennings 1998), social-private partnerships (Fondo Acción 2013), allocation of property rights to local communities (Fernández and Castilla 2005), and conservation agreements or concessions (Beck *et al.* 2004). Unfortunately, most of the oceans remain mostly as common property where resources are extracted without control (World Bank 2008; Agnew *et al.* 2009), or are used as a common dump (Sheavly and Register 2007).

A related issue is the convergence of several human activities in the marine environment. Inevitably, some of these activities are incompatible, generating substantial conflict among users. This is many times accompanied by a one-by-one approach, in which different levels or sectors overlook the plans and priorities of others (Norse *et al.* 2007). Marine Spatial Planning (MSP) or Ocean Planning is a method to counter part of these issues. Its main goal is to map all the different activities, and through a participatory process, decide the distribution of user rights according to the best development scenario (Ehler *et al.* 2009). The general guidelines proposed by this author call for an inclusive, adaptive and integrated approach to managing different activities and conflicts. MSP has been proposed as the method to apply ecosystem based management (EBM) in the marine environment (Norse *et al.* 2007). There are good examples of MSP advances in Europe (Douvere 2008), the United States (Interagency Ocean Policy Task Force 2009; NOAA and MCBI 2010; Swett 2010) and Australia (Day *et al.* 2008; Kenchington and Day 2011, Day 2016).

Another problem arises from the limited visibility of impacts to marine habitats and species, because most of them occur underwater and, unlike the clear cutting of a forest, are not readily apparent to a casual observer. This difficulty to see changes in the marine environment is aggravated by the "shifting baselines syndrome". In this syndrome, people forget or are unaware of previous abundance and diversity, and assume that the depleted ecosystem is the "natural state" (Pauly 1995). Empirical studies have confirmed this observation (Sáenz-Arroyo *et al.* 2005; Papworth *et al.* 2009). The combination of a reduced perceptibility and the "shifting baselines syndrome" reduce the potential commitment of people to protect marine ecosystems. Without such commitment, sharing responsibilities between authorities, stakeholders and the general public is less likely.

Most knowledge has been mainly generated for terrestrial environments. Marine knowledge started to accumulate first from coastal exploration, observations from the surface and fisheries landings. Only relatively recently new technology allowed science to explore the underwater world in better detail, with advances like scuba diving, oceanographic equipment, remote operated vessels, satellite tags and deep sea cameras (Levinton 2009). This technology, however, tends to be expensive, so most of the sea and its dynamics remain unexplored.

In a similar vein, everyday management activities in an MPA tend to be more challenging than in their terrestrial counterparts. MPAs are often isolated, particularly in the case of islands, making transportation difficult and expensive. In addition, boundaries are less evident because it is not easy to put markers in deep maritime zones. Surveillance and control activities, therefore, require different approaches that involve specialised technology, such as on-board electronic monitoring systems, real-time satellite imaging and un-manned aircraft (Brooke *et al.* 2010). Marine rangers need to have regular training in specialised skills like aquatic first aid and rescue, scuba diving, marine surveillance operations or navigation (Worboys and Winkler 2012). All these challenges make MPA management not only more complicated, but more expensive (Toropova *et al.* 2010).

2.4 The role of participation in governance

Participation is the mechanism by which citizens can have a say in the decisions that affect them. As shown in Table 2.2, participatory processes range from no participation, to informing the community, to empowering local communities (IAP2 2007). These diverse processes are not necessarily associated with a specific type of governance, as a top-down governance scheme can use active participation to assist decisions. Inappropriate participation can occur in symbolic

participatory processes, where information is manipulated to "educate" or "cure" people (Arnstein 1969). The danger of the latter is that powerful actors not only maintain their status quo of control over outcomes, but they can also claim that all interests have been considered. If participants realise that their inputs are not significantly included in final decisions, they can be left dissatisfied and with low motivation to participate in future processes (Jones 2009). Symbolic participation (described in Table 2.2), can lead to the disadvantages of participatory processes (e.g. lengthy and costly, (Coglianese 1997; Muro and Jeffrey 2008)) and of non-participatory processes (e.g. lack of trust and support (Halvorsen 2003)).

Table 2.2 Spectrum of participation

	No-participation	
	No-participation	**Misinformation/ manipulation**
Description	Communities and other stakeholders are not considered in the decision-making process.	Incomplete or false information is given to the public. Powerful actors other than the relevant authorities or stakeholders directly affected might influence the process.
Good-practice	Decisions are taken without public input, but are based on sound information and intend to be fair.	-
Methods	-	Leaflets, media communications (newspapers, TV, radio, internet), meetings.
	Symbolic participation	
	Information	**Consultation**
Description	Accurate information might be given to the public, although it might not be complete. Powerful actors other than the relevant authorities or stakeholders directly affected might influence the process.	Official information is given to the public (might be accurate but not necessarily complete). Feedback from the public is received, but not necessarily considered.
Good-practice	Information is complete, accurate and objective. There are tools in place for citizens to ask for and receive specific information.	Consultation is undertaken during different phases of the process. Feedback is considered and final decisions explain why the public's opinion is included or not.
Methods	Leaflets, media communications (newspapers, TV, radio, internet), meetings.	Public comments received online or by mail. Public meetings, surveys and workshops.
	Active participation	
	Involvement/ co-management	**Empowerment**
Description	Stakeholders are involved in the decision-making process. It can include some information-only phases, but the process as a whole actively engages the public. Final decisions might be taken by one of the parties (involvement), or they can be taken jointly (co-management). Power structures are often overlooked.	Decisions are taken by local communities or agencies. Power structures can still be in place.
Good-practice	All relevant stakeholders are included, regardless of local, subnational, national or international power structures. The public's opinions are built into the statement of problems and possible solutions. Decisions give priority to the most affected or disadvantaged stakeholders.	Local governance structures are fair and inclusive, have a clear vision of communal long-term benefits and have the necessary resources to execute agreed plans. Local participation processes in place.
Methods	Workshops, committees. Other communication tools are subsidiary.	Local governance structures, delegated or statutory decision authority given to local communities, agencies or decision bodies.

Adapted from Arnstein (1969) and IAP2 (2007)

Participation has an ethical justification to make fairer decisions, and a number of theoretical and empirical benefits are highlighted in the literature. According to the social learning approach (Keen *et al.* 2005), individuals and groups meet to improve the management of the environment through reflection and deliberation. This approach is characterised by open thinking and communication, facilitation and knowledge sharing (Schusler *et al.* 2003). Participation is a necessary step for conflict resolution (Pahl-Wostl 2002), creation of a shared purpose (Biedenweg and Monroe 2013) and collective action (Rydin and Pennington 2000). Participation in policy inquiry, planning and implementation might help solving environmental 'wicked problems' (Fischer 1993; Pahl-Wostl 2002; Schusler *et al.* 2003; Alcala and Russ 2006; Pomeroy 2007).

Participatory processes help bring together scientific, local and traditional ecological knowledge. While each kind of knowledge has advantages and limitations, the combination can greatly enhance the adaptive management of natural resources (McLeod and Leslie 2009). In time, participatory processes have been shown to build understanding and trust between participants, including members of different sectors and backgrounds (Pahl-Wostl 2002; Keen *et al.* 2005; Muro and Jeffrey 2008). This trust is the building block for increased social capital, which has been highlighted as an essential component for collective action and self-organisation (Folke *et al.* 2005). This, coupled with enhanced organisational skills (Lane and McDonald 2005) can make a significant difference when various stakeholders are involved in the management and decision making of MPAs.

The active involvement of different actors in the governance of MPAs also leads to local empowerment and increased stewardship for natural resources. This is particularly so in cases where involvement goes beyond meetings, and communities or stakeholders are involved in monitoring, surveillance, or other management activities (Agrawal 2005). Throughout the process people sometimes learn through experience (Kolb *et al.* 2001) and in some cases might change their worldviews and attitudes towards a more pro-environment position, as well as more pro-social (Biedenweg and Monroe 2013; Walton 2013).

A more active involvement can be related to an elevated "sense of place" or the responsibility that people feel towards a natural setting (Agrawal 2005). This, combined with skills and knowledge acquired through a meaningful participatory process, can lead to the empowerment of local actors in the governance and management of a protected area, as well as better acceptance of and compliance with regulations (Keen *et al.* 2005). In the long term, this acquired commitment of local actors results in a reduced costs of management (Tawake *et al.* 2001).

Place-based knowledge, in combination with scientific knowledge, can provide the basis for a timely and innovative response to unexpected changes (Berkes and Folke 2002). In the longer term, increasing levels of trust and capacity lead to the possibility of solving emergent problems that were not the initial focus of the participatory process (Berkes 2009). As Pahl-Wostl (2002) highlights, where both stakes and uncertainties are high, social learning is more appropriate than conventional top-down management. Most environmental problems are characterised by significant uncertainty.

However, designing and implementing effective participation processes and securing local involvement often pose significant challenges. The romantic view of "the local", where external practitioners neglect local power dynamics and internal heterogeneity, introduces serious problems in the design of participatory processes (Mohan and Stokke 2000; Armitage *et al.* 2009; Armitage and Plummer 2010). Local involvement alone is not enough for sustainable management of natural resources, as has been shown in different studies (Govan *et al.* 2009a), and many factors need to be accounted for in the planning of MPAs. Additional issues to consider include biological aspects such as productivity and ecological connections; socio-economic aspects, such as income and financial capacity of affected parties; and cultural issues, such as traditional management arrangements or the level of dependence on the natural environment of local communities.

2.5 Power-dynamics in decision-making

Power can be defined as the capacity of an actor to affect the actions of others in an intended and calculated way (Wrong 1979). Different terms have been used to describe power, including influence, domination, coercion and manipulation. These terms are used throughout the literature, sometimes interchangeably but also to distinguish different kinds of power (see for example Figure 1 in Lukes 2005). In this review and throughout the thesis, the terms influence and power will be used interchangeably. The use of the term influence will not include unconscious or unintended effects on others' opinions and decisions.

The sources of power in political settings have been categorised as: ideological, political, , economic, and military (the IEMP model) (Mann 1986). In addition to these categories, some authors allude to "information power", either as the capacity to build arguments to convince others (Forsyth 1999), or to access and manipulate information (Forester 1989; Lukes 2005; Armitage and Plummer 2010; Schneier 2012).

Political power refers "to regulations and coercion centrally administered and territorially bounded - that is, to state power" (Mann 1986). It includes the statutory authority given to entities such as government agencies, or delegated to other organisations. Most modern states, as opposed to despotic states, depend mainly on institutionalised infrastructural power and bureaucracy, penetrating and exercising power through civil society (Mann 1986). An actor who can influence key political actors acquires political power, most of the times indirect or covert.

Ideological power is possible because of the human need of finding meaning in life and belonging to a group (Mann 1986). The better-known sources of ideological power are religions, and their leaders can be in a position to influence followers to act in a way consistent with their personal goals. Other kinds of ideological manipulation are possible when people identify with a specific set of arguments or beliefs, as in the case of environmentalists (Menz 1989).

Economic power, as its name suggests, involves the capacity of mobilizing resources, including financial, to reach a specific goal. Direct financial exchanges are not necessary to exert pressure over policy decisions, but potential opportunities can be enough to change outcomes in a process. For instance, funding of development programmes by international donors or by government might be linked to policy preferences (Woods 2008; Head 2010).

Military power, as Mann (2006) defines it, is not limited to a nation's armed forces, but to any group that through violence takes control over a region or an issue. The term military, however, is misleading, as it is usually associated with government establishments such as the police or the navy.

Another source of power is the capacity of an individual or group to construct an argument to impact decisions according to their points of view (Forsyth 1999). This information power is related to a central position within a communication network (Emirbayer 1997). It can provide significant power to an actor who can share, withhold or manipulate information in order to affect a decision (Forester 1989). An individual or organisation can also acquire power within a network if other actors consider them knowledgeable or "expert" (Forsyth 1999). This source of power is also related to the concept of "governmentality" discussed by Michel Foucault, where knowledge and the construction of truth are inevitably linked to political control, and are used as an instrument to exert that power (Faubion 2000). Powerful actors can then manipulate sources of information such as education institutions and mass media to create needs and priorities in the population, effectively reducing conflict and possible challenges to their status quo.

Information power can lie in technical knowledge, understanding of the institutional structures and processes that can be modified, or the understanding of the psychology of people or groups open for manipulation. Forester (1989) makes an in-depth analysis of how misinformation is used to influence policy decisions at the levels described by Lukes (2005) – decisions, agenda setting and shaping of needs. This author distinguishes between inevitable information gaps and unnecessary distortions; the former might result from either personal idiosyncrasies or systematic differences in access to information, while the latter involves interpersonal manipulation and the strategic use of misinformation to legitimate power or institutional structures. Structural manipulations can become embedded social structures (Schneider and Ingram 1993; Lukes 2005).

The categorisation of power according to their sources is useful to study power structures and dynamics within an MPA system, but it is important to bear in mind that actors usually use multiple sources of power. The holding of one source of power, often reinforces the ability to obtain other sources of power; for example wealth can be used to obtain political power and vice versa (Wrong 1979). Another complication to the study of power is that it is many times covert. Dahl (1961) analyses the differences between direct or overt power, where individuals are involved in the decision-making processes, and indirect or covert power, where individuals can influence the decisions, but not make them. Studying informal linkages and ideological homologies, lobby strategies, and actions instead of only discourses can help understand diffuse power (Gorski 2006).

According to Max Weber, the response of individuals in a social setting to the exercise of power, referred to as social action, can be classified as instrumental, value-oriented, emotional or habitual (Kiser 2006). *Instrumental* responses to power refer to behaviours motivated by the need to accomplish a target. For example, a superior in an organisation can manipulate a subordinate through negative or positive incentives related to their contract or salary. The person yields to the possibility of punishment or reward because they want to keep their job or receive increased income. This goal determines their behaviour. On the other hand, *value-oriented* reactions are informed by ethical motivations and beliefs. Charity organisations usually target people's sense of rightfulness to raise funds for a specific cause. If an environmental organisation mobilizes a number of people to volunteer for a communal goal, most people will choose to participate because they feel it is the "right thing" to do, rather than expecting an individual outcome. *Emotional* social actions are determined by personal feelings, rather than principles or goals. For instance, if non-compliance of a person may affect their family or friends, the person might yield even if it contradicts their personal interests or ethical standards. Finally, some behaviours are not oriented by any of the previous reasons, but are *habitual*.

These habits can be developed by individuals or by social groups, and is the case of many norms and rules that shape everyday social behaviour.

Lukes' three-dimensional view of power (Lukes 2005) posits that power can be exercised in three ways. The first one is the most recognised in power studies, and refers to the success of proposing or vetoing decisions. This focus however ignores the importance of the power over the agenda, or the capacity to prevent opening certain issues to discussion. Schattschneider (1961) called this "the mobilisation of bias". In their analysis of the issue, Bachrach and Baratz (1962) fail to acknowledge that the bias can be out of the control of an individual, but be embedded in a social construction. Decision-makers might even be unaware of such barriers and where power is exercised by a legitimate authority, conflict might not be openly present (Lukes 2005). The third dimension refers to the shaping of preferences of constituencies, so people accept their situation as normal and do not consider different alternatives. In this way, conflict is prevented at an even deeper level and powerful actors easily maintain their status quo.

Lukes' third dimension of power can be compared to Foucault's theory, in that it can occur at an unconscious level. Foucault understands power as a strategy, which is both diffuse and embodied in society, and is reinforced through discourses and institutions (Gaventa 2003). In this strategy, power is constituted through actions that affect the actions of others, and is focused on shaping the conduct of individuals (Foucault 1982). In contrast to Lukes' theory, however, Foucault sees influential individuals or groups as a construction of the strategy of power, rather than as possessors of power. Power is a necessary aspect of society, being present in all aspects of life, and is constantly reinforced through education, political structures and institutions.

Most of the literature on governance and planning refers to negative aspects of power, such as manipulation of information and undue influence on decisions. In contrast to mainstream literature, I posit that power is also a necessary feature of any social group to function properly. Social roles such as coordinators, mediators and leaders need to exert power over others to be effective. Such roles have been identified as key requirements for resilient governance (Olsson *et al.* 2004; Charles 2007; Lockwood *et al.* 2012; Berkes and Ross 2013). In governance, the concept of empowerment in co-management or community-based management entails an increased ability of specific actors to control certain aspects of society (Jentoft 2005). The consequences of power depend thus on the values, motivations and objectives of the powerful.

The different theoretical developments of power tend to be complementary, as they tend to analyse different aspects of power: sources of power, means to exert influence and responses to power, and the several levels at which power can be exerted. Foucault's theory, however, is

fundamentally different in that power is not wielded by specific agents (Gaventa 2003). In this thesis I assume that power is found both in social systems as a whole, as described by Foucault. I also acknowledge that certain actors could choose to exert power over others. For practical reasons, I focus the analysis on views of power that recognise agency of individuals or groups, namely the identification of influential actors, sources of power and social structures that empower specific actors. This does not mean that I do not accept that some types of power are embedded in society through social constructs like culture, education, political systems and the media. Studying such aspects of power, however, is more difficult, because subjects are often unconscious of influences, objectives, means and origins of power.

Power is closely linked to the existence of social networks, and there is a specific actor-network theory in relation to power (Gaventa 2003). According to this theory, power is not only a function of what an actor has at their disposition to exert influence, but it also depends on the number of actors that are driven to support that exertion of influence. Murdoch and Marsden (1995), for example, bring together aspects of structure, discourse and agency in the analysis of power, looking at the connection across networks at different levels of action. Taking into consideration the importance of networks in the analysis of power, the next section is explores the theoretical bases of social networks and Social Network Analysis (SNA).

2.6 Theoretical development of Social Network Analysis

Power is fundamentally relational so it needs to be organised in a network to have an impact on decision processes (Mann 1986; Collins 2006). Social networks are groups of people or organisations that are linked together through social relations (Prell 2011). One person might belong to different groups, and their social relations and roles in the network will vary across groups. Different social networks might be linked through specific actors, and small networks are usually nested within larger ones (Moody and White 2003). For example, the governance of a World Heritage MPA like the Great Barrier Reef involves interlinked local, state, federal and international advisory and decision bodies (GBRMPA 2011). Actors might have connections both within and between levels of action. These connections can have commercial, kinship, friendship, or official origins. These multiple linkages between networks allow power structures to permeate through different decision levels and arenas, typically combining different sources of power. For example, large transnational corporations can use their economic power to support strong lobby to further their interests at both national and international political arenas (Sklair 2002). Similarly, corporate power can be used to support personal political views of Chief Executive Officers, through social responsibility allocations (Chin *et al.* 2013). In this

way, an economic power source is used to influence political decisions, which in turn might have consequences in decisions at all levels.

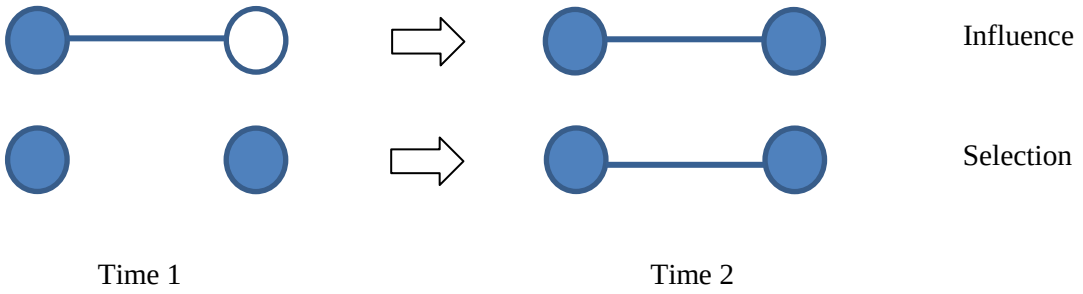
Power is not only a result of individual or organisational attributes, but it is also embedded in a particular social setting. In fact, the powerful needs to wield that power through networks, in order to obtain the expected results. Therefore, SNA methods are a useful tool to complement qualitative analyses of power, as it provides a graphical and analytical way of understanding underlying social structures. A short overview of the theoretical background of SNA methods will examine how social structures are relevant for the study of governance regimes.

Social sciences have relied mostly on characterisation of the individual or group to explain social phenomena (Borgatti *et al.* 2009). Relational sciences recognise that actors are embedded in different networks; those networks are made up of *nodes* (individuals or groups) and *links*. Network relations and structures influence the attributes of nodes, as well as the links themselves. This means that the study of networks considers an extra level of complexity in social sciences, given a strong dependence between nodes and links data (Robins *et al.* 2012).

For example, there is a concept often referred to as *social influence* or *contagion*. In this case, two linked nodes influence each other through their connection, resulting in shared attributes. A different concept, which can yield a similar configuration of the relationship, is called *social selection* or *homophily*. In this case, two nodes who share certain attributes form a relationship because they share that attribute. Figure 2.1 explains the difference between these concepts graphically. Analytically distinguishing between these two concepts is complicated, unless the study specifically focuses on network changes over time.

Figure 2.1 Comparison between social influence and social selection

Circles indicate nodes (individuals or groups) with the same (blue) or different (white) attributes. Lines indicate links.



Source: Modified from Robins *et al.* (2012)

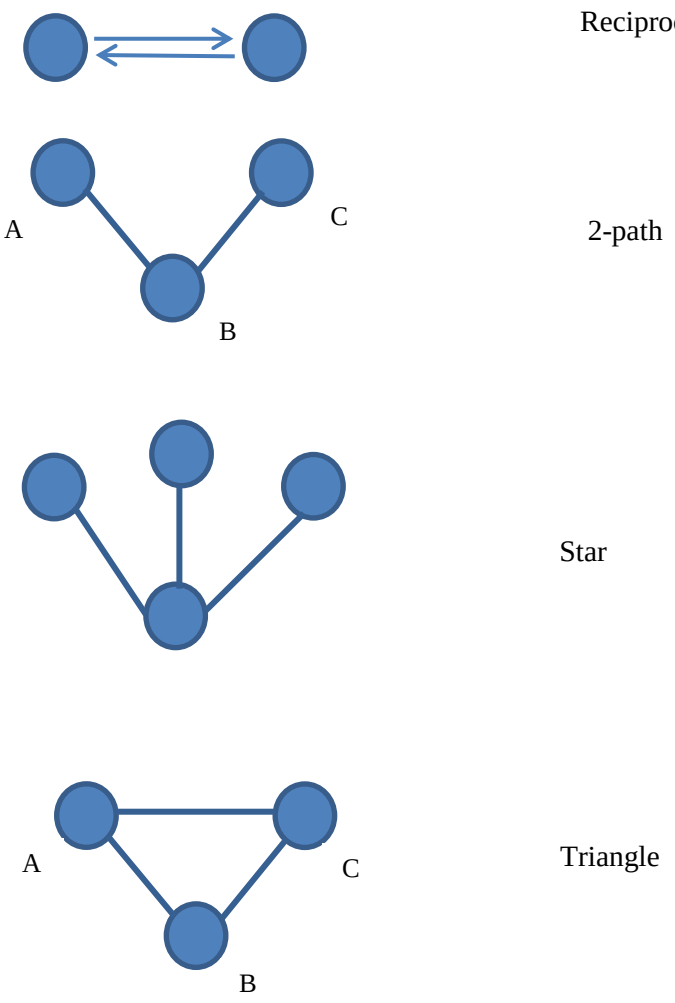
Node attributes might also be influenced by their position in a network. For example, the directors of two companies might share certain attributes, such as leadership skills. Again, without a longitudinal assessment, it will be difficult to understand if those skills were developed due to their position in the network (*generalised influence*), or if the directors are in that position because they possessed those skills beforehand (*generalised selection*) (Robins *et al.* 2012).

Links can also develop due to existing patterns in a network, a concept known as structural processes or network self-organisation (Robins *et al.* 2012). *Reciprocity* in a directed network refers to the tendency to form a link from node B to node A, when a link from node A to node B already exists (Figure 2.2). Another key structural characteristic is *closure*, where a link between A and C develops, because A is connected to B and B is connected to C. In this way, a *2-path* structure tends to become a *triangle* (Hanneman and Riddle 2005). The absence of closure, usually known as *structural holes,* has been recognised as an important structure that influences social processes. In the 2-path relationship (Figure 2.2), actor B acquires more power in the network, as it can act as a *broker*. The level of brokerage influence of an actor within a given network has been measured with a metric called *betweenness centrality* (Freeman 1979). Padgett and Ansell (1993) argue that in the 1400s, such position in a number of networks allowed the Medici family in Italy to become the most influential family. On the other hand, this position has also been related to effective collaboration and coordination among different stakeholders in natural resource management (Bodin and Crona 2009). Brokers can therefore wield their power to further their own interests, but depending on their motivations, they can also significantly improve natural resource governance. A related structure, the star (Figure 2.2), refers to the level of centralisation of an actor, and is measured by the *degree centrality*. It is

important to keep in mind, though, that brokerage and centralisation can come at a cost. The role of intermediating between different people or groups can be overwhelming (Long *et al.* 2013), and sometimes it can even result in economic penalties (Barnes *et al.* 2016).

Figure 2.2 Important network structures

Circles indicate nodes (individuals or groups), lines indicate links and arrowheads directionality.



Source: Modified from Robins *et al.* (2012)

A closed network, on the other hand, can increase collaboration, trust and social scrutiny. Robins *et al.* (2011) consider that structural signatures such as reciprocation and triangulation are a precondition for effective network governance. According to the risk hypothesis of

Berardo and Scholz (2010), depending on the perceived risks, actors in a network might choose coordination over cooperation, as coordination by a central actor can be more efficient. Under more risky conditions, however, cooperation might be preferable, because a higher level of triangulation can result in closer scrutiny of norms and agreements.

Schneider *et al.* (2003) found that such structures are not necessarily pre-existing, but can develop from an intervention to improve community-based initiatives. These authors compared networks where the National Estuary Program in the United States had worked, with others that were not part of the Program. They found that National Estuary Program networks were better connected to different levels of government, had stronger links between members, and people were more positive about policy processes.

As discussed here, there is consequently significant power that can be determined by a network position and configuration. Power holders can choose to use it in a way that affects collaborative ventures either positively or negatively. With this in mind, the next section considers the implications that power and participation have on MPA governance.

2.7 Implications of power and participation in MPA governance

Participatory and collaborative processes of natural resource management are becoming more common. Many of these processes intend to counter the historical marginalisation of certain groups (Rydin and Pennington 2000), particularly local communities that depend on the resources at stake. Powerful actors, however, can substantially influence decisions in an MPA designation process and at the same time affect the quality of governance.

As discussed in Section 2.2, governance quality has become an important issue at the international level and in some places at the national and local levels. Unfortunately, power structures can be overlooked (Lane and McDonald 2005) and the implementation of good-governance principles can be affected in several intertwined ways. For example, Prilleltensky (2008) posit that political oppression, a manifestation of unequal power distribution, can establish obstacles to participation. If individuals believe that they do not deserve to participate (psychological oppression), unequal power distribution is reinforced. For instance, McCullum *et al.* (2004) found that a food-security planning process in the United States was manipulated by influential members of the community. They reported disenfranchised participants changing their priority issues throughout the process eventually reflecting those of the most powerful members of the community. The "groupthink" phenomenon is characterised by individual

reason and moral being overridden by group pressure, resulting in bad decisions (Forsyth 1999). This concept is similar to "mistaken learning", observed in the planning of the Lake Ontario Islands Wildlife Management Area (Schusler *et al.* 2003). In this last case, authorities noticed that incorrect assumptions were accepted by the majority of participants and were included as important inputs for planning decisions. Some authors suggest that this occurs because individuals in a cohesive group try to avoid confrontation (Turner and Pratkanis 1998). However, Kramer (1998) posits that the will to maintain political power is a stronger reason behind some major bad decisions in politics. Understanding power dynamics in a group can therefore inform why a group conforms to a less than optimal decision. This knowledge in turn, is necessary to devise possible solutions.

Even in participatory processes, where all stakeholders have an opportunity to express their views, decision-makers can be influenced in undisclosed meetings by powerful actors. While participation can increase stakeholder involvement, decisions might still be unfair, if they mainly reflect the interests of powerful actors. Covert influence, such as lobbying decision-makers, also affects accountability and transparency. Information about covert or unconscious manipulations, undisclosed meetings and deliberations is often not available to the public. In this case, the responsible agency would not be able to explain how decisions were taken or why they did not correspond to public deliberations.

Unfairness and lack of transparency can in turn reduce the trust of people in public deliberation, affecting their future willingness to participate in decision-making processes (Carpini *et al.* 2004). At the same time, the responsible agency can lose legitimacy in the eyes of participants, especially if the public believes that an external individual or organisation consistently influences or makes the decisions. Poor legitimacy combined with disenchanted stakeholders can affect performance, as social support and compliance are fundamental to MPA effectiveness and resilience (Armitage and Plummer 2010; Lockwood 2010).

The implementation of good-governance principles can also face difficult challenges. For example, inclusiveness and fairness principles call for the participation of all stakeholders in decision processes. Participation of the full range of relevant actors might not be viable, because logistic or financial resources are insufficient or when motivation to participate is low. Therefore, participation is often achieved through representatives of the different stakeholders. Choosing appropriate representatives can be difficult, as they might not represent the community or sector or might lack enough authority to decide (Parkinson 2003; Living Oceans Society and World Wildlife Fund Canada 2005). An organisation leading a participatory process

needs to question the limits between influencing a process to make it fairer and the right of self-determination of a community (Armitage and Plummer 2010).

Another issue related to fairness refers to the variable resources and capabilities of the different stakeholders. While open and inclusive discussions might be in place, powerful actors can have a stronger influence on final decisions for several reasons. It is believed that "affectors" or users that significantly impact an ecosystem have more political power, as they tend to be better organised as a sector (Scheffer *et al.* 2000). Some actors might lack the capability to attend meetings, communicate directly with the top decision-makers, or to argument their point of view convincingly. Powerful actors can often organise informal talks with top decision-makers, or pay lobbyists to attend all marginally relevant meetings to constantly forward their interests. Because such cases are not uncommon (Sklair 2002), a leading agency or facilitator might need to balance the opportunities of different stakeholders to include all needs and expectations in the agenda (Lane and McDonald 2005).

In relation to performance, efficiency is a key element, including the appropriate use of funds. The costs of governance activities should be balanced in relation to investments on MPA management. A participatory process can be expensive, time-consuming, and tiring for participants and leading agencies (Coglianese 1997; Muro and Jeffrey 2008). It is therefore necessary to evaluate previously which decisions are to be made in a collaborative way, or if alternative discussion methods should complement face-to-face deliberations.

2.8 Chapter summary

In summary, power dynamics can affect the quality of governance in several ways, but power is also a necessary feature for the functioning of social groups (Forsyth 1999). For instance, overt power is essential for leadership to exist in a community, and this leadership in turn is considered important for the management of marine resources (Gutiérrez *et al.* 2011). In a different example, environmental education campaigns use covert power to influence sustainable attitudes (Vaughan *et al.* 2003). As already discussed, however, unbalanced power can harm both outcomes and governance quality. The questions that arise from the literature are essential to guide power dynamics studies. Understanding power dynamics in turn, is a necessary first step before designing ways to overcome unbalanced decisions (Forester 1989). Therefore, advancing towards more socially and environmentally sustainable governance arrangements will necessarily have to include power dynamics research. Because power structures depend mainly on individuals and particular networks, each case is unique and

requires a focused study. Power structures are not stable (Bachrach and Baratz 1962; Bodin and Prell 2011), so any study will only reflect a specific point in time. However, as researchers start to better understand power dynamics, their findings will point to common issues that can help conceptualise and guide natural resources governance practice. In this thesis, I focus on the governance quality of MPAs in Tasmania, and on how the distribution of power has affected this quality. Considering that power has both positive and negative aspects, I also explore the existence of powerful social structures that can enhance coordination and collaboration in the governance of marine resources in Tasmania. The next chapter explains the research design, describing the methodological stand, the analytical framework and the specific methods to answer the objectives of this study.

Chapter 3 Research design

In previous chapters, I discussed the importance of governance quality for MPA effectiveness, and the effect of power structures on key elements of a governance regime. Developing an understanding of the complexity of a governance regime and the associated interplay with power structures requires a multi-method approach. This chapter first explains the methodological underpinnings for my choice of a pragmatic research approach and a combination of qualitative and quantitative methods. Then I develop the analytical framework that guided my thesis and explain why I selected the Tasmanian case study. Finally, I describe the methods used to address the research objectives introduced in Chapter 1.

3.1 Pragmatism as a research paradigm

Several philosophical research paradigms have been proposed to explain the different ontological, epistemological and methodological[1] stands in the social sciences. The most important ones, positivism/post-positivism and constructivism, are usually seen as opposing philosophies (Feilzer 2010). Positivism and post-positivism assume that reality exists and that the researcher can be an objective observer of that reality. Quantitative methods are favoured, although qualitative methods can be used to complement the main findings. In contrast, constructivism sees reality as social constructions, so it can vary depending on the interpretations of individuals or groups. As the researcher is linked to that reality, results are created through the inquiry process (Guba and Lincoln 1994). Constructivists prefer qualitative methods (Johnson and Onwuegbuzie 2004).

The dichotomy between these main research paradigms gives priority to either quantitative or qualitative methods, restricting the choice of methods that researchers can use (Johnson and Onwuegbuzie 2004; Feilzer 2010). In fact, both quantitative and qualitative methods have advantages and limitations. To overcome these constraints on researchers, pragmatism has been proposed as an alternative research paradigm that can combine the advantages of several research methods, and overcome the weaknesses of specific methods (Johnson and Onwuegbuzie 2004).

[1] Ontology refers to the nature of reality, epistemology to the relationship between the researcher and reality, and methodology to the process of acquiring knowledge about that reality (Mason 2002).

There are conflicting understandings of pragmatism as a research paradigm, but in general, pragmatists accept that reality is composed of several elements; some of these elements can be objectively understood, while others are subjectively constructed. Feilzer (2010) proposes that causality and subjectivity can be reconciled, if one accepts that there are regular patterns that can be predicted, but are subject to singularities derived from the multiple perceptions of the same reality. Pragmatism is ultimately "problem-centred" and the choice of methods depends more on their usefulness to answer a research question, than on specific methodological prescriptions (Mackenzie and Knipe 2006). It is thus a suitable philosophical framework for mixed-methods research.

Governance of MPAs and of social ecological systems in general involves objective realities (biophysical elements), and social constructs (e.g. culture, economic systems, political settings, values, institutions). I believe that both objective and subjective elements exist regardless of the research process. These elements are complex and dynamic, and are subject to the specificities of the local circumstances, preventing a universal understanding. As a researcher, my own story and values influence what I consider important and therefore what merits investigation. Because one of the objectives of this thesis is to make recommendations to improve the governance regime, the results of the research have the potential of changing this reality.

From this point of view, I chose a number of methods, both qualitative and quantitative, based on their usefulness in answering the specific objectives. I do not believe that one is superior to the other, as the constructivist and positivist/post-positivist purists posit. A mixed-methods approach allowed me to take advantage of the benefits of both quantitative and qualitative methods, capturing as much of the inherent complexity of a governance regime as possible. Instead of perpetuating the dichotomy posed by purists on any side of the philosophical spectrum (Johnson and Onwuegbuzie 2004), I assume that these two approaches are complementary.

3.2 Analytical framework

In order to structure the analysis, I created a framework, based on the Institutional Analysis and Development framework (Ostrom 2011), and the framework for analysing the sustainability of social-ecological systems (Ostrom 2009). Unlike Ostrom's frameworks, the one used here is not exclusively focused on the extraction of resources. I distinguish between core governance components of the governance system (instruments, actors, decision arenas and the problems that the governance regime faces), and influences on these components (socio-economic,

cultural, political and natural settings). The framework in Figure 3.1 shows influences, core components of the governance regime, and key elements for each component. It is important to note that there are significant interrelations between the different influences, components and specific elements. Elements in the framework are thus used to structure analysis, rather than represent independent categories. Table 3.1 lists the sources that were used to justify the choice of each element in the framework.

Figure 3.1 Analytical Framework for analysing MPA governance

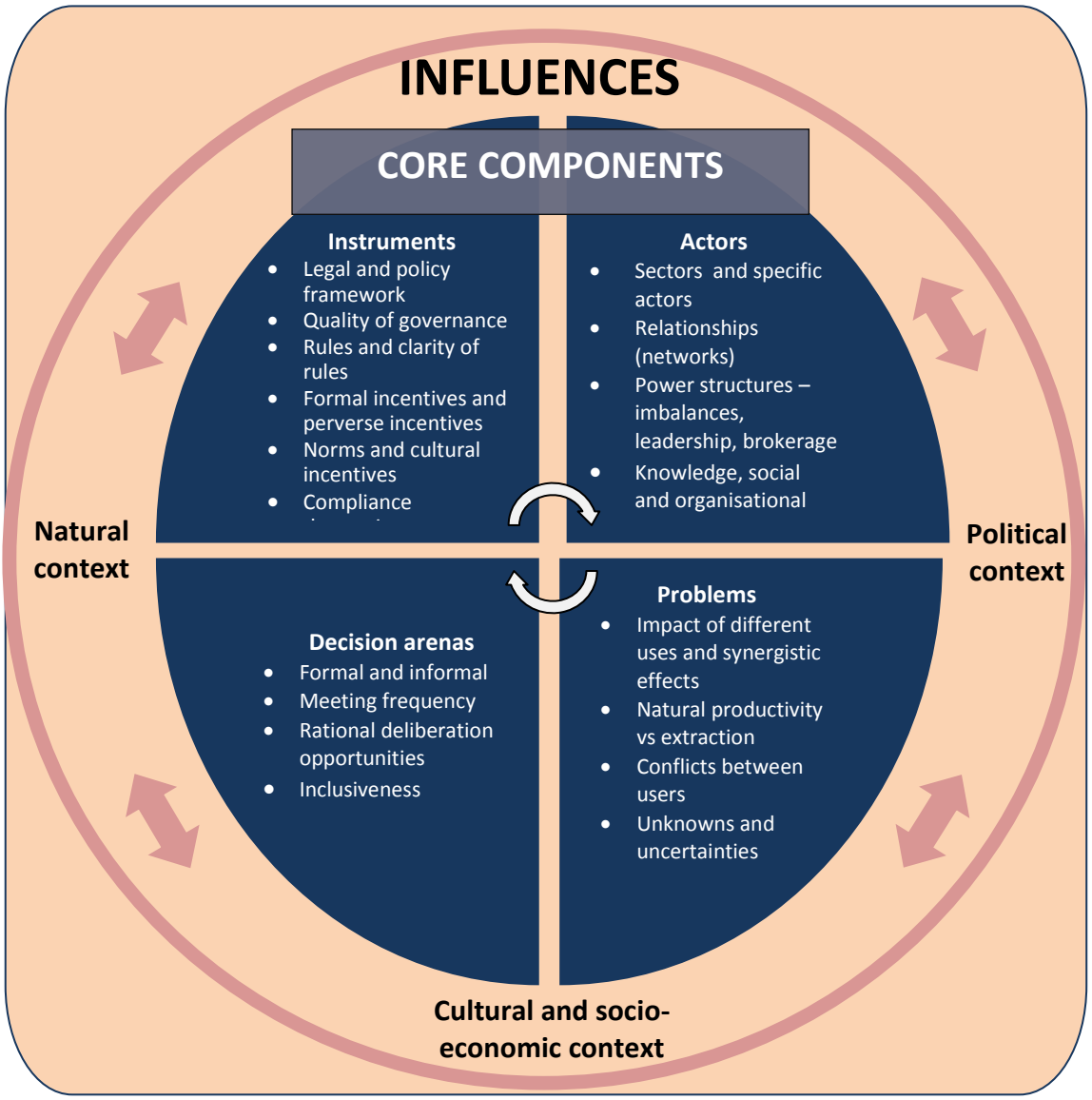


Table 3.1 Influences, components and elements in a governance regime

Influence/ Component	Element	Supporting sources
Socio-economic context	Demographics of study area population	(Gunderson and Holling 2002; Ostrom 2009; 2011; Jones 2013; García *et al.* 2014; Worboys *et al.* 2015)
	Economic system	(Kelly 1997; Gunderson and Holling 2002; Worboys *et al.* 2015)
	Economic status of the population in general and of specific stakeholders.	(Ostrom 2009; 2011; García *et al.* 2014)
	External and internal market influences	(Krien 2010)
	Relative importance of main industry sectors	(Kelly 1997)
	Financial capacity for implementation	(Kelly 1997)
Cultural context	Main worldviews, principles, values and assumptions	(Gunderson and Holling 2002; Ostrom 2009; 2011; Ban *et al.* 2013)
	Respect for rules and norms	(Kelly 1997)
	Activities associated with well-being in the study area, such as recreational fishing	(Franklin 1996; Frawley 2015),
Political context	Relative dominance of political parties and their associated ideological stands and policies	(Worboys *et al.* 2015)
	Level of politicisation of decisions	-
Natural context	Bio-geography (e.g. endemism, distribution patterns)	(Cowen *et al.* 2000)
	Physical influences (e.g. currents)	(Carr and Reed 1993; Edgar *et al.* 2000)
	Fauna and flora characteristics (e.g. resilience, life history)	(Carr and Reed 1993)
	Biodiversity and ecological dynamics	(Gunderson and Holling 2002)
Instruments	Legal and policy framework	(Ostrom 2009; 2011; Ban *et al.* 2013; Jones *et al.* 2013)
	Quality of governance	(European Commission 2001; Lockwood 2010; Lockwood *et al.* 2010; Borrini-Feyerabend *et al.* 2012)
	Rules and clarity of rules	(Ostrom 2009; 2011)
	Formal incentives and perverse incentives	(Gunderson and Holling 2002)
	Norms and cultural incentives	(Ostrom 2009; 2011)
	Compliance determinants	(Arias *et al.* 2015)
	Effectiveness measurement	(Pomeroy *et al.* 2004; Ban *et al.* 2013)
Actors	Sectors – actor map	(Ostrom 2009; 2011; Ban *et al.* 2013)
	Relationships (networks)	(Gunderson and Holling 2002; Ostrom 2009; 2011)
	Power structures – imbalances, leadership, brokerage	(Gunderson and Holling 2002; Ostrom 2009; 2011)
	Dependence on natural resources and specific livelihoods	(Ostrom 2009; 2011)
	Knowledge of the socio-ecological system	(Gunderson and Holling 2002; Ostrom 2009; 2011; Ban *et al.* 2013),
	Social and organisational capital and capacity	(Pretty and Smith 2004)
Decision arenas	Formal and informal	(Ostrom 2009; 2011)
	Meeting frequency	(Govan *et al.* 2009a)
	Rational deliberation opportunities	(Gunderson and Holling 2002; Armitage *et al.* 2007)
	Inclusiveness	(Schirmer *et al.* 2016)
Problems	Impact of different uses and synergistic effects	(Craig 2012)
	Natural productivity vs extraction	(Ostrom 2009; 2011)
	Conflicts between users	(Ban and Klein 2009; Ostrom 2009; 2011)
	Unknowns and uncertainties	(Kelly 1997; Gunderson and Holling 2002)
	Regime deficiencies	(Lockwood *et al.* 2012)

3.2.1 Influences

Key analytical elements of the socio-economic context for MPAs affect political priorities and include demographics of the population living in the study area; economic status of the population in general and of specific stakeholders; external and internal market influences; relative importance of the main industry sectors; and the degree of dependence on the extractive and non-extractive use of natural resources. These economic factors also shape preferences in the population for choosing a particular livelihood. For instance, the growth of tourism in certain regions has provided new opportunities for fishers, representing not only alternative livelihoods, but also changing MPA perceptions (Arias *et al.* 2015). In the same manner, market factors have driven preferences in fishing practices, such as modifications of the tuna fishery to reduce dolphin bycatch (Hall *et al.* 2000). Cultural influences include worldviews, principles, knowledge, values given to the resources at stake and assumptions; these elements can affect attitudes and behaviours. Activities associated with well-being in the study area, such as recreational fishing, also shape priorities and the perception of problems in the governance system. The political context is mainly given by the relative dominance of political parties and their associated ideological stands and policies. The level of politicisation of decisions partly determines the extent that the governance regime is affected by these issues. Finally, natural context elements, like bio-geographical history, physical influences, fauna and flora characteristics, biodiversity and ecological dynamics, influence the success of specific governance arrangements.

3.2.2 Core elements

Instruments. Legislation and policies are fundamental components of an MPA governance regime, establishing agencies, responsibilities and rules. In some cases, they can also specify incentives for specific practices, like punishments and rewards. Sometimes they can create unanticipated or perverse incentives. Although legislation and policy can be configured in accordance with good governance practices, often the implementation of good governance principles depends on the willingness of governors or facilitating agencies. There are cultural elements such as norms, which affect behaviour, including compliance with formal rules. Finally, the measurement of effectiveness of both governance and management systems is fundamental to track progress, to report on progress and to remedy shortcomings.

Actors. A first step in understanding a governance regime is identifying the actors who can affect and who are affected by the regime. It is important to assess which actors have statutory powers, have indirect influence over decisions and have been marginalised or overlooked. More

in depth analysis can also shed light on capacities of different actors, the knowledge they have of the social-ecological system, and the relationships between them. Investigating power dynamics includes both imbalances between different actors, but also social structures that can either facilitate or impede collaboration. It is also important to understand to what extent different actors depend on natural resources, either for their subsistence, for their livelihood, or for their well-being. In each case, it is informative to understand what natural resources are required to sustain each of the existing activities. I chose to work at the organisational level, rather than the individual for two reasons. First, the MPA process in Tasmania has encompassed different regions and a diversity of actors, many of which work at the State level. It was thus unpractical to focus at individual actors, as this would have added a complex mix of local, regional and State levels of analysis. Second, several years have passed since the development of the MPA strategy for Tasmania and even from the last designation process (See Chapter 4 for details). Organisations tend to be more stable over time than individuals in particular roles. It therefore made more sense to focus my analysis at the organisational level. Nevertheless, although analyses focused at the organisational level, some personal opinions were asked of participants in the Questionnaire (see Section 3.3.4 and Appendix 2) to shed light on the different views found about MPAs and the governance regime. The questionnaire clearly states which questions explore personal views and which questions refer to their organisation (see Appendix 2).

Decision arenas. Formal decision arenas tend to be easier to identify, especially if they are open for public participation (e.g. consultation hearings) or attendance (e.g. legislative discussions), or if minutes of each meeting are produced and shared publicly (e.g. Fisheries Advisory Committees (FAC)). Other meetings occur in private, minutes are possibly not written nor are results shared with the public (e.g. lobby meetings). These private meetings are more difficult to track and can only be analysed through key informants, who might be reluctant to participate if dealing with sensitive information. Relevant information about formal and informal decision arenas include the periodicity of meetings, inclusiveness, scope of participation (e.g. decision-making, consultation, informative) and opportunities for cross-sector dialogue.

Problems. Governance regimes usually need to deal with a number of interactions between the natural environment, human activities and institutions. Key issues include the balance between extraction and natural productivity, the impact of different uses and synergistic effects, and the conflict between different users. A key element in a governance system is the existence of a substantial knowledge of the natural environment, to have a good baseline with which to compare subsequent changes. Although this is fundamental for establishing and adjusting management and governance arrangements, often there are significant information gaps,

variability and associated uncertainties. Other problems can be related to regime deficiencies, and the possible mismatch between the ecological and governance scales.

To be able to identify problems and possible solutions for a governance regime, it is important to understand the different core components, and the influence of external settings. While I briefly explore most elements identified in the framework for the Tasmanian case study, my research objectives focus mainly on governance quality and power structures, key elements in the "instruments" and "actors" components respectively. The next section describes the specific methods used to answer the research objectives.

3.3 Methods

In this section, I first explain the process of selection of the case study and the participants of this study. Table 3.2 summarises how the different methods helps answering the specific objectives of this study. I then explain each of the chosen methods.

3.3.1 Case study selection

The case study methodology is appropriate in this instance given the complexity of governance regimes and the necessity of studying them in their "real-world" setting (Yin 1994). Out-of-context approaches would probably fail to gain a holistic understanding of all the variables at play (Patton 2002). Because so many factors influence a governance system, all findings from a particular case study cannot be generalised to other settings. This does not mean that important insights cannot be gained to guide governance improvements elsewhere, or contribute to theory building.

Around the world, there has been significant progress in the establishment of MPA systems (Toropova *et al.* 2010). For instance, Australia has declared the largest MPA system in the world (Department of the Environment 2014a). Tasmania, however, has designated less than three per cent of its surrounding state waters as protected areas, with important conservation gaps (Kriwoken 2016). Poor progress in establishing a comprehensive representative MPA system is comparable only to the Northern Territory (Edyvane and Blanch 2016). This is particularly striking, considering that Australia has been considered a global leader in marine conservation, due to systematic planning of reserves (Fernandes *et al.* 2005), and an innovative governance regime for the Great Barrier Reef (Olsson *et al.* 2008; Day 2016). Tasmania therefore made a good case study because of the stark contrast between the State's limited progress and Australia's global leadership. I aimed to learn how external settings, formal

institutions, good governance criteria and power structures interacted to create a unique governance regime. Understanding the Tasmanian MPA governance regime could provide insights into deficiencies that have prevented progress. Comparing these governance issues to other settings can guide better practices for the case study. Additionally, lessons can contribute to the improvement of practices elsewhere and to theoretical developments of MPA governance.

Governance issues tend to cross spatial and temporal scales, complicating the establishment of clear boundaries. Nevertheless, as mentioned in Chapter 1, for practical reasons I decided to limit my study to those waters within the jurisdiction of the State of Tasmania, up to three nautical miles from the Territorial Sea Baseline. This thesis deals mostly with the marine environment adjacent to mainland Tasmania and associated islands such as Bruny Island and those in Bass Strait. Details of the study area are presented in Chapter 4.

3.3.2 Selection and recruitment of participants

The records of contributors to MPA inquiries (see Section 4.4 for a timeline of the process in Tasmania) for the Kent Group/Port Davey and the Bruny bioregions (Resources Planning and Development Commission 2003a; 2008) were used to create an initial list of potential participants for the questionnaire and interviews. Following the Participants were selected to represent core organisations. This list was discussed with MPA academic experts who participated in any of the processes, to eliminate organisations that were only indirectly relevant, and to include organisations that did not participate at the time but have subsequently had a direct interest in Tasmanian MPAs. Organisations in this purposeful sample were classified as "core" (key to MPA governance) or "peripheral" (only have a potential/indirect role in MPA governance). During interviews, participants were also asked to suggest additional organisations, and if an organisation was mentioned by initial participants more than three times, it was approached to participate in the study. Aboriginal groups were considered "core" actors, due to their strong connection with the sea and its resources (sea country). The intricacy of the evolving legislation and formal recognition of rights in Australia and Tasmania, imply an added level of complexity to the study of governance. This legal framework, in addition to distinct worldviews, a different set of values and particular cultural traditions deserve a dedicated study of their role in marine governance. I therefore consider that Aboriginal issues, although highly relevant, are beyond the scope of this thesis.

Organisations in the list were contacted first by email to answer the questionnaire, explaining the purpose of the study, why they had been selected, what was expected and ethical considerations (see Appendix 1). Participants were told that they had been invited to participate due to their organisation's role in MPA processes in Tasmania. The first set of questions in the

questionnaire clearly stated that they referred to their personal opinions on MPA issues and governance regime, while the second part indicated that questions referred to the organisations they represented. Interview questions were specifically framed to elicit the points of view of the organisation. If an organisation had not responded, a reminder email was sent one week afterward and a third email three weeks later. "Core" organisations were further contacted by telephone or directly at their office, to ensure their participation if possible. If an organisation was "peripheral", it was not contacted again after three emails. For some organisations such as associations, it would have been relevant to include the responses of several members, to obtain a general understanding of their views. However, as some organisations only have one member working on marine issues or MPAs, they would have been underrepresented in the results. Only one or a few participants from each organisation were thus invited to participate. Therefore, the questionnaire was not intended to reflect the view of a representative sample of Tasmanian MPA stakeholders, but rather as a tool to obtain specialised information about MPA management and governance.

Ethical standards followed the University of Tasmania guidelines, which seek to ensure that participants are not negatively impacted by the research, and that their anonymity is respected. Therefore, all participants were given an information sheet (Appendix 1) explaining key issues about the study, their participation and their rights, and signed a consent form before answering the questionnaire or interview questions.

Table 3.2 Methods used to answer each of the specific objectives of this thesis

Objectives	Methods
1. To analyse the core elements and context of the governance regime of Tasmanian MPAs.	• Document review • Internet questionnaire
2. To evaluate the extent to which the Tasmanian MPA governance regime follows good governance principles.	• Key informant interviews – questions (1-3)
3. To assess power dynamics of the Tasmanian MPA governance regime and how they have affected the quality of governance.	• Key informant interviews – questions (4-7). • SNA • Media prominence analysis
4. To make recommendations to improve the governance regime.	• Synthesis of results for objectives 1-3, and comparison with findings from the literature
5. To draw out lessons from the Tasmanian case study that can inform the design of MPA governance regimes elsewhere.	• Identification of key lessons that are relevant to other settings

3.3.3 Document review

I searched both academic and non-academic documents, available online and in libraries. This search included scientific publications on marine ecology and MPAs in Tasmania, on socio-

economic issues and on governance of natural resources in Tasmania. Reviewed documents also included formal reports, meeting minutes (e.g. Parliament, FACs) and webpages and publications of "core" organisations. These documents provided key information on natural, socio-economic, political and cultural influences. It was also possible to find key information about elements from core components, including the legal framework, participatory methods, observance of some good governance principles, some characteristics of decision arenas, problems and conflicts, and actor attributes. Results of this analysis are presented in Chapter 4.

3.3.4 Internet questionnaire

Twenty-six respondents, belonging to 21 organisations answered the questionnaire. Five core organisations declined answering the questionnaire, but accepted to participate in an interview. Questionnaires were designed to cover some of the main points from the analysis framework (see Appendix 2), including: key personal attributes (link to the marine environment and place attachment); personal views on reasons for compliance with rules; understanding of the social ecological system (Tasmanian MPAs, ecosystem and socio-economic aspects, governance regime); opinion on participatory processes (opportunities, good governance principles, recommendations); organisation attributes (link to the marine environment, intellectual capital, and relationships); and perception about power structures (preferred information sources, and distribution of influence). The construct table in Appendix 3 shows the correspondence between constructs, sub-constructs and specific questions. I used SurveyMonkey® to collect responses and even though participants had the choice of answering in print or face to face, all answered online.

Most questions used Likert-type scales to allow a quantitative analysis. Data were consolidated in an Excel sheet, and I used Excel and SPSS to run statistical analyses. Given the small sample size, most data were analysed using descriptive statistics (percentages, means and standard deviations). When a series of questions were used to measure a construct (i.e. place attachment, intellectual capital), Cronbach alpha was used to measure reliability (Cronbach 1951). Kruskal-Wallis tests and post-hoc analysis were used to find differences between mean ranks; these tests were used to assess the level of knowledge between types of MPAs ("older no-take reserves", "newer and remote no-take reserves" and areas with lower protection levels – "Marine Conservation Areas" (MCAs) (Chapter 4); to explore the level of understanding of different elements of the social-ecological system (Chapter 4); and to determine influence levels (Chapter 6). The questionnaire included some open-ended questions that were used to complement quantitative analyses. Results of questionnaire analyses are presented in Chapters 4 to 6.

3.3.5 Key informant interviews

At least one person from each core organisation was contacted to participate in an in-depth interview. An email contact was followed by a telephone call or a visit to establish an appointment for the interview. In two cases, it was not possible to interview current members of core organisations, so a previous member or employee with relevant knowledge was contacted. In this way, the views of all core organisations were included. Twenty-six people were interviewed, belonging to 23 organisations[2]. Semi-structured interviews included a set of qualitative questions (1 to 3 in Appendix 4). The first question was intended to obtain a general idea of the interest of the organisation on MPAs; it also allowed interviewees to start the conversation with a familiar topic. The second and third questions were the main source of data for analysing the quality of governance. Interviewees were not asked about each good governance criteria (see Chapter 2), but instead it was an open question about what could be better in the governance system. In this way, rather than leading interviewees to comment on each governance criteria, the foremost issues in the mind of interviewees came up, exposing the relative importance given to each issue at the time. By focusing on what could be better, interviewees talked about the problems they perceived, but provided specific recommendations as well. Results on governance quality are analysed in Chapter 5. The rest of the questions were used to obtain SNA data (see next section), but comments made while filling in matrixes were analysed qualitatively to support good governance and power analyses.

Interviews were recorded and transcribed. Transcriptions were sent to each interviewee, and if they sent any corrections, these were made. Transcriptions were used to conduct a thematic analysis. I chose thematic analysis because it gave me enough flexibility to analyse how different interviewees perceived issues of governance quality and power. Thematic analysis was deductive or theoretical (Braun and Clarke 2006), as I used pre-conceived themes (good governance criteria and sub-criteria in Table 2.1) to identify relevant transcript extracts and to classify them. These extracts, comprising phrases, sentences or paragraphs, were coded against each criteria/ sub-criteria using an Excel spreadsheet. The spreadsheet was sorted to group statements by criteria/ sub-criteria. A preliminary sort was individually checked by the two supervisors, disputed coding allocations noted, followed by a team discussion that achieved consensus on the appropriate code for each extract.

[2] The total number of organisations that participated in the study (questionnaire and/or interview) was 27.

3.3.6 Social network analysis

These analyses focused on understanding the distribution of power, existence of coalitions and the presence of key social structures in an information exchange network. Studies that use SNA usually focus on relationships at the individual level. I acknowledge that studying individual rather than organisational relationships provides a more nuanced picture of networks, but such networks are usually more dynamic as well. One of the criticisms of SNA is precisely that its scope is significantly limited in time (Bodin and Prell 2011). Considering that the last MPA declarations in Tasmania were in 2009 (see Chapter 4), and that many individuals who participated were no longer involved, I chose to focus my analysis at the organisational level, rather than the individual, as organisations tend to remain stable for longer. Considering the scope of the study described in Chapter 1 and in Section 3.3.1 of this chapter, key organisations were those with a role at the Tasmanian State level.

The method of eliciting relationships has important consequences on the resulting networks. To discover network relationships, I chose what Doreian and Woodard (1992) termed "expanding sampling". In this method, participants are presented with a list of actors, but they can add organisations to this list if they consider them relevant. In this study, participants were presented with a list of key actors to collect network data (Appendix 5 and questions 4 to 7 in appendix 4). This list was generated following the procedure explained in section 2.3.2. Question 4 inquired about the relationships with other organisations to exchange information; question 5 asked participants to rank actors according to their influence level, while question 6 asked which sources of power were used by highly influential actors. Participants were also asked if they were aware of the existence of any coalitions regarding marine conservation issues (question 7). If more than three people identified additional organisations from those in the original list, these were also invited to participate in an interview (to answer both qualitative questions from section 3.3.5, and SNA questions). Two such organisations were included in the sample, and two answered to the request saying that they did not have an interest in Tasmanian MPAs.

For cognitive methods (information provided by a third party, rather than reporting about their own relationships) all actors in the list were included. Cognitive analyses included Hubs and Authorities and Social Cognitive Mapping (see below). For the information exchange network and exponential random graph models (ERGMs - see below), only interviewed organisations were included. Multi-sector groups, such as advisory committees, were excluded from the analysis. I made this decision because no representative would have been able to provide a unified depiction of the group's networks. In a similar way, roles, such as the Minister for

Primary Industries, fluctuate too much to provide a reliable idea of social networks, unless these are very specific in time.

Most SNA data were analysed with UCINET 6 (Borgatti *et al.* 2002) and the PNet software was used for estimation of ERGMs (Wang *et al.* 2009). Results on the distribution of influence were analysed in UCINET 6 to obtain the Hubs and Authorities score for each stakeholder, E-I indexes (explained below), to calculate centrality measures (Freeman 1979) and to visualise the information exchange network.

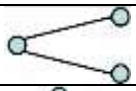
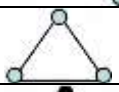
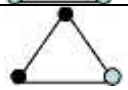
As mentioned in Chapter 2, power needs to be organized in a network to have an impact, and SNA therefore provides a useful method to study power (Domhoff 2014). In this thesis I used the Hubs and Authorities score (Kleinberg 1999) to identify influential actors in the network. Rather than just counting the number of times each actor is identified, this method takes into consideration the "knowledge" that each nominator has of the network. In this way, an influential actor (Authority) is considered as such if more "knowledgeable" actors (Hubs) nominate them. The sum of squared Authority scores is one, so squared Authority scores provide an overall idea of power distribution in the network of actors.

Social Cognitive Mapping can be used to identify groups within a network, and it partly relies on the understanding of social dynamics by a third party. As several members of the network identify existing ties, this tool provides a method of triangulation of information. Additionally, it is useful when not all members of a network participate in the collection of data (Neal 2008). Question 7 in this study aimed at identifying coalitions. The most relevant stage of the analysis (Neal and Neal 2013) was the identification of co-membership groups. The answers were organised in a valued matrix, in which higher numbers indicated more agreement about the existence of the link. An E-I index provides a measure of clustering of subgroups in a network according to specified attributes by counting external links, subtracting internal links and dividing by the total number of links (Hanneman and Riddle 2005). The index value ranges from -1 (all links are internal) to 1 (all links are external). Actors in this study were divided into three categories: those with a specific interest on the extraction of resources ("extractive"), those with a specific interest on conservation ("conservation"), and those with more indirect or ambiguous interests ("other"). As the E-I index only measures the presence or absence of links, the valued matrix was dichotomised, including only values greater than two (three or more people assumed that the actors were part of a coalition). After counting internal and external links, the procedure runs 5,000 permutations, calculating the probability of obtaining the same index by chance.

To understand the social structures across sectors in the Tasmanian MPA information exchange network, I conducted a statistical analysis using ERGMs. For this network, only reciprocated ties from interviewed organisations were included. Standard statistical models assume data independence, while ERGMs account for the inherent dependence of relational data. ERGMs allow the comparison between the observed network and a series of random configurations of similar networks (Robins *et al.* 2004). In this way, statistical inferences can be made regarding the prevalence or absence of key configurations. To understand relationships across sectors, I used non-directed graphs for actors with attributes (Wang *et al.* 2009). Attributes followed the same division of actors as for the E-I indexes, namely "extractive", "conservation" and "other". First, I ran an estimation of how many of each structure were present in the network. Any configuration that was not present was excluded from models; configurations with low numbers were also explored cautiously and eventually excluded in the model if they were preventing convergence or a reasonable goodness of fit. The best model I ran included structures that indicate "closure" of the network (see Chapter 2 for an explanation) or triangles; structures that indicate brokerage or stars; and links across sectors. These structures are shown in Table 3.3.

Table 3.3 Main social structures analysed in exponential random graph models (ERGMs) in this study

Black circles in structures indicate nodes with specific attributes.

Effects	Structure
2-star	
Triangle	
Cross sector collaboration (*extractive*)	
Cross sector collaboration (*conservation*)	
Cross sector bridging (*extractive*)	
Cross sector bridging (*conservation*)	
Cross sector links (*extractive*)	
Cross sector links (*conservation*)	

Effects with significant positive estimates indicate that the observed network has more of that configuration than expected by chance, while significant negative values indicate that the configuration occurs less frequently than expected by chance. The presence/absence of different configurations can be interpreted based on the theoretical background (see Chapter 2).

3.3.7 Media prominence analysis

This analysis counts how many times each actor is mentioned in the mass media. As Grossmann (2013) suggests, not all influential actors are necessarily mentioned, but all actors that are frequently mentioned are most likely influential. I chose to complement other power analysis with this method, because most of my data provided mixed information of past and present perceptions of power. Media prominence could give me an idea of the distribution of power at the time debates about a particular MPA issue were taking place. I focused on two important media outlets: Australian Broadcasting Corporation (ABC) rural news and *The Mercury* newspaper. Search words included "marine protected area", "marine reserve", "marine park", "MPA" and "no-take". The search was limited to between 2000 and 2009, as some archives did not have previous issues readily available and after 2009 the debate on MPAs died out. Further date restrictions, when necessary, were set as one week before key dates in the consultation processes detailed in Chapter 4, and one month afterwards. I found 15 relevant articles in ABC rural news and 21 articles in *The Mercury* newspaper. In those 36 articles, I counted how many times specific actors were mentioned.

3.4 Chapter summary

In this chapter, I explained the choice of a pragmatic paradigm and a mixed-methods approach. I described each of the methods deployed to address the research objectives introduced in Chapter 1. I propose a modification of analytical frameworks found in the literature to suit an analysis of governance regimes that deal principally with non-extractive uses, even if extractive users need to be considered. To understand the implications of power structures on governance, I proposed a novel combination of quantitative and qualitative methods. This collection of methods aimed to expose some of the nuances of power dynamics in a governance regime, including both negative and positive effects. The next chapter describes the case study area in detail, including consideration of each of the key elements in Figure 3.1. Information sources for Chapter 4 are primarily derived from the review of key documents, with questionnaire results also providing supporting information about some elements.

Chapter 4 The governance regime for MPAs in Tasmania

In the analysis framework developed in Chapter 3 (Figure 3.1), I propose that the core components of a governance regime include legal and policy instruments, actors, decision arenas, and the problems that the regime should address. Influences that affect the structure and functioning of the regime are the natural, political, socio-economic and cultural contexts in which the core elements are embedded. In this chapter, I describe these core and context elements based on the available literature and using information gathered in this study. First, I summarise the core elements, with a focus on the legislation, policies, organisations and decision arenas relevant to MPAs in Tasmania. With this background information, I explain the development of the Tasmanian MPA system. Then I review the external elements that influence the regime (natural, socio-economic, cultural and political contexts). In Section 4.2, responses to selected questions from the Internet questionnaire (Section 3.3.4) are used to characterise actors' marine-based activities; levels of place attachment; knowledge, values and perceived impacts of MPAs; understanding of the social-ecological system; and perceived intellectual capital of key organisations. This information on framework core elements and influences provides a basis for identifying problematic features of the governance regime, which are summarised in the final section of the Chapter. As key organisations and advisory bodies often change names and responsibilities, in this document I will use organisation/body names and roles as of 2016.

4.1 Legal and policy framework

Numerous legal and policy instruments, originating at international, national and State levels, shape the governance of MPAs. Table 4.1 shows the most relevant legislation. At the international level, Australia is signatory to several agreements that establish guidelines on the use and management of natural resources. In particular, the CBD aims to conserve global biodiversity. Two CBD programmes are relevant to MPAs: the Programme of Work on Marine and Coastal Areas, and the Programme of Work on Protected Areas. In 2004, the parties decided that by 2012 a comprehensive, effectively managed, and ecologically representative

system of MPAs would be established and maintained. In 2010 it became apparent that this objective would not be accomplished, and the date was reset to 2020 (De Santo 2013).

Australia first showed an interest in international MPA developments in 1984, when the Council of Nature Conservation Ministers established MPA objectives. These reflected the objectives proposed by IUCN in the 1975 *International Conference on Marine Parks and Reserves* (Kriwoken and Haward 1991). Australia reiterated its international commitment to establish a system of protected areas in 1992, as signatory of the CBD.

That year the Australian, state and territory governments signed the *Intergovernmental Agreement on the Environment*, where the parties agreed to cooperate in fulfilling those commitments (Department of the Environment 1992). Under the Australia and New Zealand Environment and Conservation Council, the Task Force on Marine Protected Areas was created to guide the advancement towards a national system, the NRSMPA. This body developed the marine regionalisation of Australia, as a basis for ensuring proper representation in the reserve system of the most important habitats and ecosystems (IMCRA 1998). It also developed a set of guidelines and a plan of action (ANZECC 1998; 1999). This initial development and subsequent processes Australia-wide referred to IUCN guidelines on protected areas. Both the definition of protected area[3] and categories of protection (Appendix 6) follow IUCN guidelines (Dudley 2008; Day *et al.* 2012). The Australian Government provided financial support to state governments for the development of the NRSMPA (Kelleher *et al.* 2005). Some references in the Estimates Committees and other Parliamentary proceedings of Tasmania suggest that the State Government had indeed a commitment with the Australian Government to advance in the establishment of an MPA system (Parliament of Tasmania n.d.).

The Australian Government led initial efforts for a cooperative approach to establish a NRSMPA. Nevertheless, after the last report of progress in 2008 (Department of the Environment 2008), which collated the efforts of the Australian, state and territory governments, references gradually focused more on offshore reserves. For example, in its fifth report to the CBD (2014), Australia claimed it had established the "largest representative network of marine protected areas in the world", exceeding the Aichi target 11[4]. The

[3] "An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means" (Marine and Marine Industries Council 2001 pg. 8).

[4] Aichi targets were established during the meeting of the CBD in 2010. Aichi Target 11 states: "By 2020, at least 17 per cent of terrestrial and inland water areas and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through

Collaborative Australian Protected Areas Database from 2014 reported almost 328,000,000 hectares of MPAs. Most of these areas correspond to Commonwealth Marine Reserves (Department of the Environment 2014b). However, even excluding coastal waters, Barr and Possingham (2013) found that many ecosystems were not appropriately represented in the Australian MPA system.

The management of marine ecosystems is shared between the Australian Government and state/territory governments. The Offshore Constitutional Settlement resolved several years of conflict between these different levels of government over the jurisdiction of marine territories (Haward 1989). The *Coastal Waters (State Powers) Act 1980* establishes that state governments are responsible for the management of coastal waters, i.e. up to three nautical miles from the Territorial Sea Baseline. From that point, the Australian Government is responsible for the management of its Territorial Sea and Exclusive Economic Zone out to 200 nautical miles. Cooperative arrangements between the national and state/territory governments allow the joint management of certain issues, such as some fisheries, or the surveillance of offshore reserves.

At the national level, several instruments have tried to align the advances on biodiversity protection at all levels of government (Table 4.1). The most important Federal legislation is the *Environment Protection and Biodiversity Conservation Act 1999*. Under this Act, Australian Government powers are limited to "matters of national environmental significance"; this includes Commonwealth marine areas, World Heritage properties, nationally endangered species, the Great Barrier Reef Marine Park and migratory species protected under international agreements. Other instruments, such as policies and strategies detailed in Table 4.1, are not legally binding, but provide guidance to harmonize actions across levels. Unfortunately, policies and strategies aiming to integrate efforts at all levels, and across sectors, as in the case of the Australian Ocean's Policy, have failed to produce expected results (Vince *et al.* 2015).

Tasmania is one of six states of the Commonwealth of Australia, which is a federal constitutional monarchy under a parliamentary democracy. Tasmania follows the Westminster system, in which the Parliament (House of Assembly and Legislative Council) has legislative powers, while executive powers rest with the Premier and Ministers. Ministers are elected members of Parliament and in practice are appointed by the Premier. Elections for the State Government occur approximately every four years, using a proportional representation system

effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape".

known as Hare-Clark. Five electorates, each with five seats in the House of Assembly or Lower House, determine the makeup of the majority or coalition government. The Premier and Cabinet positions are determined by the majority party. The Legislative Council or Upper House represents 15 one-seat electorates. The majority of these seats are held by independent representatives, rather than party members. Elections for two or three seats of the Upper House occur every year (Parliament of Tasmania 2005). The executive and legislative powers are not completely separated in this system, and the Lower House tends to be dominated by the political party in power. As members of political parties in Australia usually support the views of the party, the Upper House plays an important role of political counterbalance (Stone 2008). This control, however, is mostly limited to decisions that need to be approved by both Houses of Parliament.

In Tasmania, difficult environmental debates, such as the Franklin dam and Wesley Vale pulp mill, started a long dispute in politics and society in general, between pro-development interests and conservationists. These debates raised concern over the transparency of environmental impact assessment processes, and at the same time decreased the trust of investors. In order to integrate planning with environmental assessments, the Resource Management and Planning System was developed in 1993 (Davies 2000). The intention was to align Acts, policies and procedures in a whole-of-government framework, ensuring that sustainability[5] was included in the planning of any development. This initiative also provided citizens with rights to appeal, if they believed these principles were not respected (Environmental Defenders Office 2014). Nevertheless, legal instruments governing the designation and management of MPAs continue to divide responsibilities between government agencies with different priorities (Kriwoken 2016).

[5]Sustainable development is legally defined as "managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while a) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and b) safeguarding the life-supporting capacity of air, water, soil and ecosystems; and c) avoiding, remedying or mitigating any adverse effects of activities on the environment" (Environment Protection Authority (TAS) 2013).

Table 4.1 Most relevant MPA legal framework and guiding instruments.

Level	Instrument	Purpose and management
International	*Convention on Biological Diversity 1992*	Purpose: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits. Management: The responsible body in Australia is the Department of the Environment (Australian Government). However, under the Intergovernmental Agreement on the Environment, all states and territories cooperate to achieve national environmental goals. The Natural Resource Management Ministerial Council and the Biological Diversity Advisory Committee have been the primary coordination forums.
	World Heritage Convention 1972	Purpose: to protect cultural and natural heritage around the world considered to be of outstanding value to humanity. Management: The responsible body before the World Heritage Committee is the Australian Government, particularly the Department of the Environment. Different sites have different management arrangements; for example, Tasmania is responsible for the Tasmanian Wilderness and Macquarie Island World Heritage areas.
Australian	*Environment Protection and Biodiversity Conservation Act 1999*	Purpose: To protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places ("matters of national environmental significance"). It includes nationally threatened species and commonwealth marine reserves. Management: The responsible body is the Department of the Environment (Australian Government). It needs to coordinate certain issues with state/territory governments.
	Australia's Biodiversity Conservation Strategy 2010-2030	Purpose: To provide guidance in the implementation of the CBD. At the time of writing this thesis, a review of this strategy aimed to update it and account for other international obligations, such as the *Convention on the Conservation of Migratory Species of Wild Animals*, the *Convention on International Trade in Endangered Species of Wild Fauna and Flora*, and the *Ramsar Convention on Wetlands*. Management: The responsible body is the Department of the Environment (Australian Government). It coordinates with state/territory governments and the Australian Local Government Association.
	National Representative Marine Protected Area Strategy 1998 (NRSMPA)	Purpose: The Commonwealth, states and territories agreed to establish and manage a comprehensive, adequate and representative system of MPAs, to contribute to the long-term ecological viability of marine and estuarine systems, maintain ecological processes and systems, and protect Australia's biological diversity at all levels. Today, its focus is mainly on the system of Commonwealth Marine Reserves (CMR). Management: The responsible body is the Department of the Environment (Australian Government).
	Australia's Oceans Policy (1998)	Purpose: To set a framework for integrated and ecosystem-based planning and management for Australia's marine jurisdictions. Management: All institutional arrangements have been dismantled and integrated into the Department of the Environment (Australian Government).
State	*Nature Conservation Act 2002 (NCA)*	Purpose: To make provision with respect to the conservation and protection of the fauna, flora and geological diversity of the State

Level	Instrument	Purpose and management
		and to provide for the declaration of national parks and other reserved land. It does not provide for marine organisms other than marine mammals or birds. Management: Department of Primary Industries, Parks, Water and Environment (DPIPWE) – Minister for Environment, Parks and Heritage
	National Parks & Reserve Management Act 2002 (NPRMA)	Purpose: To provide for the management of national parks and other reserved land. Management: DPIPWE, in particular Parks & Wildlife Service Tasmania (PWS) – Minister for Environment, Parks and Heritage
	Living Marine Resources Management Act 1995 (LMRMA)	Purpose: To promote the sustainable management of living marine resources, to provide for management plans relating to fish resources and to protect marine habitats. Fish is defined as "any aquatic organism of any species, whether dead or alive, which, in the normal course of events, spends part or all of its life in the aquatic environment". This definition excludes marine mammals and birds. Management: DPIPWE, in particular the Marine Resources Branch – Minister for Primary Industries and Water
	Fisheries Rules 2009	Purpose: Regulates fisheries. The NCA does not regulate "fish", as defined in LMRMA, so fishing restrictions in MPAs need to be established via these rules. Management: DPIPWE, in particular the Marine Resources Branch – Minister for Primary Industries and Water
	Public Land (Administration and Forests) Act 1991	Purpose: One of its main purposes is to set up the procedure that the Tasmanian Planning Commission (TPC) has to follow in order to enquire and make recommendations on the use of public land. This includes the designation of new MPAs. Management: Department of Justice and the Minister for Planning and Local Government. The TPC advises the Minister on planning issues.
	Tasmanian Marine Protected Areas Strategy 2001 (TMPAS)	Purpose: To establish and manage a comprehensive, adequate and representative system of marine protected areas, to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Tasmania's biological diversity. Management: unclear. In the two instances were new MPAs have been proposed after 2001, the Minister for Primary Industries and Water, rather than the Minister for Environment, Parks and Heritage, has issued a reference to the TPC to conduct the inquiry and gazetted the final decision. At some point both Ministries were in the same portfolio.

Other instruments relevant to the conservation of the marine environment include:

At an international level

- *United Nations Convention on the Law of the Sea 1982*
- *The Convention on Wetlands of International Importance especially as Waterfowl Habitat –the Ramsar Convention*
- *Convention on International Trade in Endangered Species of Wild Fauna and Flora*

At a national level

- *Environment Protection (Sea Dumping) Act 1981*
- Some fisheries legislation (Australian Fisheries Management Authority)
- Some site specific legislation, like the *Great Barrier Reef Marine Park Act 1975*

At the Tasmanian level

- *Natural Heritage Strategy for Tasmania (2013 – 2030)*, which calls for a more coordinated management of the marine environment.
- *Marine Farming Planning Act*, and several fisheries/marine farming rules and regulations (Department of Primary Industries Parks Water and Environment 2015).
- *Pollution of Waters by Oil and Noxious Substances Act 1987*
- *State Coastal Policy 1996*
- *State Policy on Water Quality Management 1997*
- *Threatened Species Protection Act 1995.*

A legal framework, however, requires a level of compliance in order to be effective. Compliance depends on a number of factors, such as severity of penalties, probability of being caught during an infraction, understanding of the reasoning behind regulations and levels of public support. Questionnaires explored the perceived motivations behind compliance of MPA regulations (Table 4.2). The Tasmanian State Government was unquestionably considered the legitimate decision-maker and enforcer (100% agreed or strongly agreed). Participants believed that the most important motives to obey regulations were the risk of incurring in penalties (96% agreed or strongly agreed) and social pressure (88.5% agreed or strongly agreed). Most respondents accepted that participating in the design (73% agreed or strongly agreed), understanding the reasons behind regulations (73% agreed or strongly agreed) and regulations that were in the interest of the community (69% agreed or strongly agreed) were important components of compliance, although there was less agreement about these points.

Table 4.2 Perceived motivations for the acceptance of MPA regulations.

Answer scale: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree). N=26.

Statement	Mean	SD
Governments have a legitimate role in regulating the use of MPAs	4.65	0.49
Regulations are effective if there is a high risk of incurring penalties for non-compliance	4.35	0.56
Most people obey regulations when there is social pressure to do so	4.19	0.63
People are more likely to obey regulations if they have participated in their design	3.85	0.83
Most people obey regulations that are in the interest of the community, even if they personally affect them in a negative way	3.77	1.21

Regulations are effective only if people understand their purpose	3.73	1.04

4.2 Actors

The most important sectors formally and informally involved in the governance of MPAs are political parties, decision makers, government agencies, commercial and recreational fishers, conservation organisations, some tourism operators, divers and community members and groups. Over time, Ministries, Departments and government bureaucracy have changed, along with their associated responsibilities. Since the early initiatives on MPAs, conservation NGOs have increased their involvement with marine issues; for example, Environment Tasmania only began its Marine Program in 2008. Since the first MPA initiatives in Tasmania, some organisations have disappeared, and others have started. The main actors involved in the governance of MPAs in Tasmania are described in Table 4.3.

Table 4.3 Stakeholders with an interest in MPAs in Tasmania.

Sector	Subsector	Organisation	Short description and relation to MPAs/marine issues
Political parties		Greens	Political party that follows principles of environmental and social justice. This party originated from "United Tasmania Group", a party created in 1972 to counterbalance the lack of interest of the two major parties in protecting native forests. Negotiated with Liberal (1996-1998) and Labor (1989-1992; 2010-2014) to set the balance of minority governments. It openly supports the creation of MPAs: "The Tasmanian Greens will work … to establish a comprehensive, adequate and representative system of marine, wetland, estuarine and coastal reserves Greens" (The Greens 2014)
		Labor	This party supports a mixed economy, where the Government needs to intervene to address market imbalances. It held power in 1989-1992; 1998-2002; 2002-2006; 2006-2010. Progress on MPAs was mostly during Labor governments. It supports MPAs under certain conditions: "Labor will support the development of a balanced strategy that includes the Tasmanian Marine Protected Areas Strategy whilst providing fair and equitable access to all those with interests in fish and fishing" (Labor 2014)

Sector	Subsector	Organisation	Short description and relation to MPAs/marine issues
		Liberals	The main orientations of this party are based on Liberalism as a political philosophy, with its emphasis on the individual and enterprise as main agents to meet challenging social and economic conditions. Overtly against new MPAs: "A majority Hodgman Liberal Government will impose a moratorium on any new Marine Protected Areas in the State's waters (Tasmanian Liberals 2014)".
Politicians/Ministers		Houses of Parliament	Major planning decisions on MPAs need to be tabled in Parliament, and the following reserved land classes need their approval: national park, State reserve, nature reserve or historic site.
		Minister for Environment, Parks and Heritage	Responsible for NPRMA, NCA, as well as the Environmental Management and Pollution Control Act 1994.
		Minister for Primary Industries and Water	Responsible for LMRMA and several Fisheries Rules and Regulations. Previously, this portfolio also included Environment. This Ministry referred inquiries to TPC and gazetted designations of new MPAs in 2004 and 2009.
Government agencies/divisions/advisory councils	**Planning**	Tasmanian Planning Commission (TPC)	Provides planning advice to the Minister for Planning and Local Government. By reference of the appropriate Minister, undertakes inquiries into the future use of public land and reviews reports and representations on draft management plans.
	Fisheries and aquaculture	DPIPWE - Marine Resources Branch	Responsible for marine fisheries, and the administration of the LMRMA. Within MPAs, marine resources other than marine mammals and birds are their responsibility. Under the LMRMA, a "marine resources protected area" can be proclaimed, although none has been declared to date.
		Fisheries Advisory Committees (FAC)	Advice the Minister on issues related to each fishery (e.g. abalone, scalefish, recreational). Major stakeholder groups are members.
	Conservation	DPIPWE - Parks and Wildlife Service	Administration of NPRMA. Responsible for the development of management plans, site plans and management policies for the conservation and sustainable use of marine reserves. Implementation of educational programs, and coordination of surveillance (with the Tasmania Police), research and monitoring (with research organisations). Environmental impact assessments for activities in marine reserves and issue of permits and licences.
		National Parks and Wildlife Advisory Council (NPWAC)	Provides advice to the State and National Governments on issues related to the protected area system and World Heritage sites. Members are individuals with expertise in relevant themes such as conservation, social issues and tourism. MPAs are occasionally discussed by this body.
	Surveillance and compliance	Marine and Safety Tasmania (MAST)	Responsible for the safety of commercial and recreational boating, management of marine facilities (including inside MPAs) and management of environmental issues relating to vessels. They have disputed MPAs that would increase safety risk to fishers if they needed to navigate further offshore than usual.
		Tasmania Police - Marine Safety and Rescue	Responsible for compliance of MPA regulations. Little input into the designation of new MPAs.
	Tourism	Tourism Tasmania	Agency responsible for the promotion of tourism values of the State. MPAs are not of major interest.

Sector	Subsector	Organisation	Short description and relation to MPAs/marine issues
Multi-sector/multi-level groups or projects		Natural Resource Management (NRM) South	NRMs tend to focus more on terrestrial issues, but NRM South has participated and supported several marine initiatives. Current Commonwealth funding is tied to non-marine activities, limiting their involvement in marine conservation.
		Derwent Estuary Program (DEP)	Partnership between industry, State and local governments, and community-based groups. It aims to reduce pollution, monitor water quality, conserve habitats and species, and promote the sustainable use and enjoyment of the estuary.
Education and research organisations		Institute for Marine and Antarctic Studies (IMAS)	Affiliated to the University of Tasmania (UTAS). Provides key information about MPAs and fisheries in Tasmania, among other studies.
		Commonwealth Scientific and Industrial Research Organisation (CSIRO) - Marine and Atmospheric Research	Conducts research on several marine issues, although more at a national level.
		Woodbridge Marine Centre	It is part of the Department of Education and provides schools with the opportunity to learn about the marine environment and marine science with hands-on activities. Some of their activities are conducted in MPAs.
		High schools	Some high schools offer units with an emphasis on marine science, and use MPAs for some of their activities.
Commercial fishers	**Aquaculture and Fishing Industry**	Tasmanian Seafood Industry Council (TSIC)	This is the representative body of the fishing and marine farming industries. MPAs can affect these industries and the Council represents their interests before the Government.
		Sector groups (e.g. Rock Lobster Fishermen's Association (TRLFA), Abalone Council)	Each major sector within the seafood industry has an association, to represent their interests. MPAs can affect these industries, and these bodies allow them to voice their concerns in a unified manner.
Tourism	**Tourism operators**	e.g. Cruise Tasmania, Pennicott Wilderness Journeys, Wild Ocean Tasmania, Stanley Seal Cruises, East Coast Cruises	Most tourism operators were not involved in the designation of MPAs, but some have shown an interest in marine conservation.
	Diving operators	e.g. Southern Ocean Sport, Eaglehawk Dive Centre, Go Dive, Bicheno Dive Centre	Very few dive operators were strongly involved in the designation of MPAs.
	Game-fishing operators	Sea Charter Boat Operators of Tasmania (SCBOOT)	Peak organisation representing marine charters. Many charters focus on game-fishing, although other services like diving and whale watching are offered.
Conservation organisations		Tasmanian Conservation Trust (TCT)	Was established in 1968. Some of their actions are focused on marine issues. It represents the conservation sector in FACs and had an active role in designation processes.
		Environment Tasmania (ET)	A representative body created in 2006 to represent several local conservation groups. The marine program started in 2008 and

Sector	Subsector	Organisation	Short description and relation to MPAs/marine issues
			includes several campaigns to promote MPAs and marine conservation.
		Ocean Planet	A small group focused on providing information and campaigning for the conservation of Tasmanian marine resources.
		Environmental Defenders Office (EDO) Tasmania	Provides advice to the general public and community groups about environmental and planning laws.
Recreational fishers		Tasmanian Association for Recreational Fishing (TARFish)	Representative body representing the interests of recreational marine fishers. It was established in 2004. According to its policies, it supports MPAs under a series of criteria.
		Game fishing clubs	Four clubs in Tasmania (Tasman Peninsula, St. Helens, Northern Area and Hobart) are represented by the Tasmanian Game Fishing Association.
Divers		Diving Clubs	There are several diving clubs in Tasmania, but there is no unified organisation to represent their interests. Clubs have not been strongly involved in MPA debates.
Media		(Newspapers, TV, radio)	The main newspaper in Tasmania is *The Mercury*, and most national media outlets, such as ABC, Nine Network and Seven Network, have programs specific for Tasmania.
Other		(e.g. Aboriginal organisations, local coastal communities)	There are several organisations dealing with Aboriginal issues, including the Tasmanian Aboriginal Centre, the Tasmanian Aboriginal Land & Sea Council, the Aboriginal Heritage Council, Aboriginal Heritage Tasmania within DPIPWE, and the Tasmanian Regional Aboriginal Communities Alliance formed in 2015. There have been several attempts to gain access to traditional marine and coastal resources (Lockwood, pers. comm. 2016). There are other local groups and organisations with an interest on coastal conservation, such as Coastcare groups (Southern Coastcare Association of Tasmania (SCAT) supporting groups in the South and East coasts) and local communities.

The questionnaire explored the activities in which representatives of key organisations were involved. Results showed that, independent of the main objectives of the organisation, most respondents were involved in providing education or communication about marine issues (69% dedicated more than 10 days per year), working with Government agencies (62% dedicated more than 10 days per year), and with NGOs (58% dedicated more than 10 days per year). Less people were involved in activities directly related to the marine environment, such as no-take diving and snorkelling (42% dedicated more than 10 days per year), recreational fishing (42% dedicated more than 10 days per year) research (38% dedicated more than 10 days per year), and volunteering (23% dedicated more than 10 days per year). Only one commercial fishing organisation and no marine farming organisation answered the questionnaire, so these activities were underrepresented (8% and 0% dedicated more than 10 days per year) (Table 4.4).

Table 4.4 Frequency with which respondents engaged in different activities related to the marine environment.

Answer scale: 0 (never), 1 (less than 10 times/year), 2 (between 10 and 20 times/year), 3 (more than 20 times/year). N=26.

Activity	Mean	SD
Providing education/communication about marine issues	2.00	0.96
Work with a Government agency involved in marine issues	1.81	1.27
Work with a non-governmental agency involved in marine issues	1.69	1.10
Marine-related research	1.69	1.23
Recreational no-take diving/snorkelling	1.31	1.23
Recreational fishing (nets, pots, handline fishing, spearfishing, diving for seafood)	1.31	1.17
Boating, jet skiing, water skiing	1.27	1.16
Coastal or marine care volunteering	1.08	1.07
Surfing, kayaking, sailing, windsurfing, kitesurfing	1.04	1.09
Commercial fishing	0.27	0.81
Marine farming	0.00	0.00

A series of items in the questionnaire provided a scale of place attachment to Tasmanian marine environments (Table 4.5). There was a strong agreement about most statements, except the importance of fishing and the dependence on the marine environment. Excluding those two questions, a Cronbach's alpha of 0.80 indicated a good reliability of the scale. Surprisingly, even though there was only one respondent representing the commercial fishing sector, 62% of respondents agreed or strongly agreed that their livelihoods depended on Tasmania's marine environment. This dependence is therefore not limited to those who make a living by extracting resources, but it is also perceived by tourism operators, researchers and individuals working on conservation.

Table 4.5 Level of place attachment to marine environments

Answer scale: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree). N=26.

Statement	Mean	SD
I am very attached to Tasmania's marine environments	4.81	0.40
I identify strongly with Tasmania's marine environments	4.77	0.43
Tasmania's marine environments mean a lot to me	4.77	0.43
Recreation in Tasmania's marine environments is an important part of my life	4.77	0.43
Tasmania's marine environments are the best places for doing what I like to do	4.31	0.97
Fishing and obtaining seafood from Tasmania's marine environments is an important part of my life	3.65	1.35
My livelihood depends on Tasmania's marine environments	3.46	1.27

When asked about the effects of MPAs on different activities, respondents had more divergent views (Table 4.6). Most respondents agreed that MPAs had more positive than negative effects on education and research (96% answered mostly positive or more positive than negative) and on no-take recreational diving and snorkelling (92% answered mostly positive or more positive than negative). People were more undecided regarding recreational (62% answered mostly positive or more positive than negative) and commercial fishing (54% answered mostly positive or more positive than negative). MPAs were regarded to have no effect on marine farming (46% answered no effect), surfing/kayaking/sailing (77% answered no effect) and boating/jet skiing (77% answered no effect).

Table 4.6 Perceived effects of MPA on different activities

Answer scale: 1 (mostly negative), 2 (more negative than positive), 3 (no effect), 4 (more positive than negative), 5 (mostly positive). N=26.

Activities	Mean	SD
Education and/or research	4.85	0.28
Recreational no-take diving/snorkelling	4.73	0.75
Recreational fishing (nets, pots, handline fishing, spearfishing, diving for seafood)	3.69	1.31
Commercial fishing	3.38	1.35
Surfing, kayaking, sailing, windsurfing, kitesurfing	3.35	0.62
Boating, jet skiing, water skiing	3.04	0.58
Marine farming	2.85	1.08

Most respondents believe MPAs have value for research and education (92% very important or extremely important), for future generations (81%) and for the conservation of biological diversity (81%). There was less agreement about the importance of MPAs for ecosystem functions (73%), personal well-being (69%) and recreational opportunities (54%) (Table 4.7).

Table 4.7 Perceived values of MPAs

Answer scale: 1 (not important), 2 (not very important), 3 (somewhat important), 4 (very important), 5 (extremely important). N=26.

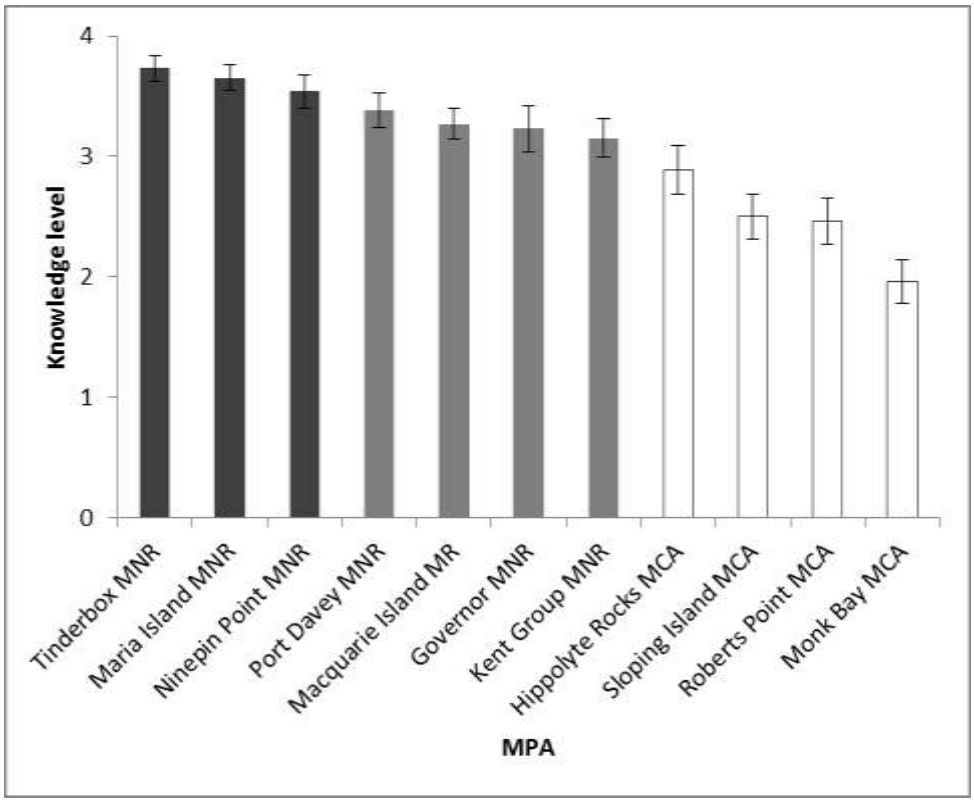
Values	Mean	SD
Research and education	4.42	0.88
Future generations (allowing others in the future to enjoy the above values)	4.38	1.02
Conservation of biological diversity	4.27	1.20
Maintenance of ecosystem functions (trophic interactions nutrient cycling, water quality)	4.04	1.38
Sense of personal well being	3.54	1.31
Recreational opportunities (diving, kayaking, sailing)	3.42	1.32

The overall high level of attachment to the marine environments indicates that members of all sectors have a general interest in their conservation. The more divergent views on the effects and value of MPAs, however, suggest that some respondents believe that there are other more valuable or effective conservation tools.

To have an idea of how familiar representatives of the main organisations were with the MPA system respondents scored their general knowledge about specific MPAs from 1 (I have not heard about it) to 4 (I am very familiar with its location, rules and objectives). MPAs were classified as "older no-take reserves" (Tinderbox, Maria Island, Ninepin Point and Governor Island), "newer and remote no-take reserves" (Macquarie Island, Kent Group and Port Davey) and "MCAs" (Hippolyte Rocks, Sloping Island, Roberts Point, Monk Bay). Respondents were more familiar with no-take marine reserves, particularly older ones, than with multiple use MCAs (Figure 4.1). A Kruskal-Wallis test was significant (chi-square=69.5, $p<0.05$) and a post-hoc analysis detected differences between all three subgroups.

Figure 4.1 Knowledge level about different MPAs

Answer scale: 1 (I have not heard about it), 2 (I have heard about it, but I don't know much about its location, rules or objectives), 3 (I have a general idea about its location, rules and objectives) and 4 (I am very familiar with its location, rules and objectives). N=26. Kruskal-Wallis results suggest significant differences between different kinds of MPAs (chi-square=69.5, $p<0.05$). Dark grey: "older no-take reserves"; light grey: "newer and remote no-take reserves"; white: "MCAs".



A series of questions were included in the questionnaire to understand how much organisations knew about socio-economic, biological and governance aspects of the marine environment in Tasmania (questions 6 and 7, Appendix 2). The results indicate that most respondents had a relatively good knowledge of the system in general (Table 4.8); issues with the lowest scores included reasons behind the designation of MPAs, mechanisms to voice an opinion, key marine habitats and reasons behind other stakeholder's opinion. Issues were sorted into four categories: MPA, ecological, socio-economic and governance knowledge. A Kruskal-Wallis test indicated that there were no significant differences between these categories (chi-square=4.83, p=0.18).

Table 4.8 Self-reported understanding of different elements of the social-ecological system.

Answer scale for each statement: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree). N=26. Kruskal-Wallis results suggest there are no significant differences between different kinds of knowledge (chi-square=4.83, p=0.18).

Issues	Mean	SD
I know the advantages, disadvantages and limitations of MPAs	4.42	0.86
I understand the social and economic costs of declines in marine species and ecosystems	4.23	0.82
I know which Tasmanian marine species are endangered	4.15	0.92
I understand the impacts of different industries and activities on marine ecosystems	4.15	0.88
I understand the role of each government organisation	4.08	1.02
I know roughly the magnitude of the economic contributions of each marine industry in Tasmania (major fisheries, aquaculture, recreational diving)	4.00	0.98
I understand the reasons behind each stakeholder's position regarding MPAs	3.88	0.95
I know which are the key habitats (e.g. spawning or nursery areas) for marine species in Tasmania	3.81	0.98
I know the mechanisms by which my opinions can be considered by decision makers responsible for the designation and management of MPAs	3.77	1.07
I understand the reasons behind each MPA designation and their regulations	3.73	1.08

In order to understand the intellectual capital[6] of the main organisations, a scale of seven questions was included in the questionnaire (Appendix 2). For most organisations, only one representative answered the questionnaire. One of the research organisations, however, was known for the divergent points of view on MPAs. For this reason, the result indicates the average of the responses of six individuals. A Cronbach's alpha of 0.79 indicates a good reliability of the scale. A higher intellectual capital can be related to an organisation's success (Bounfour and Edvinsson 2005). In combination with other factors, organisations that are more successful could be in a better position to lead a collaborative approach to marine conservation. Mean scores for key organisations as perceived by respondents to the questionnaire are presented in Table 4.9.

[6] The term intellectual capital refers to the intangible assets of an organisation. It is composed of human, relational and structural capital (Bounfour and Edvinsson 2005).

Table 4.9 Intellectual capital of key organisations in the Tasmanian MPA governance system

Response scale for positive statements on different aspects of intellectual capital referring to social activities, trust, collective problem-solving, leadership, strategic direction, outcomes and financial capacity: -2 (strongly disagree), -1 (mostly disagree), 0 (neither agree nor disagree), 1 (mostly agree), 2 (strongly agree). Standard deviation (SD) refers to agreement level between the seven different questions.

Organisation	Mean	SD
Divers 1	2.00	0.00
Research organisation 3	2.00	0.00
Partnership 2	1.86	0.38
Conservation NGO 4	1.71	0.49
Recreational fishers 2	1.71	0.49
Tourism operators 1	1.57	0.53
Research organisation 2	1.29	1.11
Conservation NGO 3	1.29	0.76
Government agency 3	1.29	0.76
Conservation NGO 1	1.14	0.69
Conservation NGO 2	1.14	1.46
Advisory body 2	1.14	1.46
Commercial fishers 1	0.86	0.38
Political party 1	0.86	0.38
Recreational fishers 1	0.86	0.38
Partnership 1	0.71	0.49
Research organisation 1	0.51	1.01
Advisory body 1	0.43	1.51
Divers 2	0.14	0.90
Government agency 1	-0.57	0.53

4.3 Decision arenas

The most prominent decision arena corresponds to sitting of both Houses of Parliament, which are responsible for the approval of State laws. Parliament usually meets approximately 50 days per year, between March and May, and between August and December. Select Committees can also be appointed to inquire into specific issues. Witnesses can be called before these committees to inform debates. Parliamentary sessions are open to the public and the media as observers; committees are usually public, but under certain circumstances relating to sensitivity and confidentiality, a committee can decide to conduct hearings in private (Parliament of Tasmania 2005). These forums are where most policy debates take place, but citizen views are only partially represented through elected members. While private member's bills can be considered, Government bills predominate in the parliamentary agenda (Parliament of Tasmania 2005). The Government in power usually dominates the House of Assembly, so most Government bills are approved by this House. The Legislative Council has then an important role reviewing and then ratifying, amending or rejecting proposed legislation (Stone 2008).

Government bills are usually first proposed by the relevant Minister and discussed in Cabinet. Only when Cabinet has agreed on a bill is it tabled in Parliament. Cabinet meetings are therefore another important decision arena. This is especially true regarding decisions that do not need Parliamentary approval, as in the case of designation of Conservation Areas. Cabinet meetings, however, are not open to the public or the media.

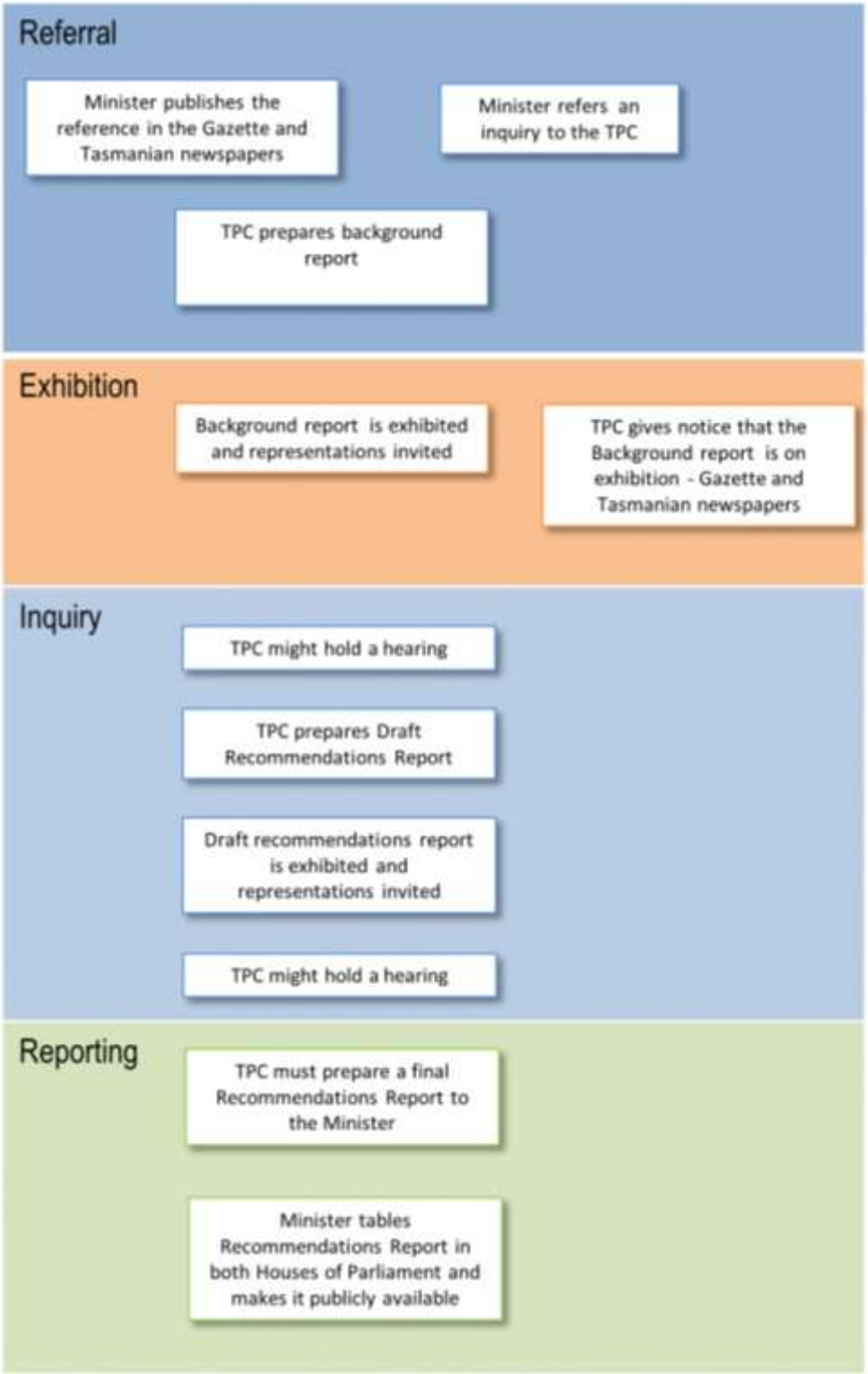
Fisheries Advisory Committees (FACs) have been established for the most important fishing sectors: abalone, crustacean, recreational, scalefish and scallop. Committees usually meet four times per year, and members include sector representatives, fisheries authorities, peak bodies and the conservation sector. These committees aim to have open discussions, if possible reaching a consensus to provide advice to the Minister. While such meetings are not strictly decision arenas, many recommendations are taken on board by the Minister. For example, the recent changes in bag limits for popular recreational species at the end of 2015 (Department of Primary Industries Parks Water and Environment 2015) were discussed at length during meetings of the Recreational FAC (see Meeting Agendas and Chair's Summaries in Department of Primary Industries Parks Water and Environment 2015). Unfortunately, as each fishing sector has its own committee, recommendations tend to reinforce a species by species management, rather than having an ecosystem approach (Stump 2009).

The National Parks and Wildlife Advisory Council, also provides advice to the Minister on Tasmanian parks and reserves declared under the NCA 2002, and on World Heritage issues to the Australian Government. Rather than representing specific organisations, members of this body are appointed by the Minister according to their expertise on issues such as conservation, social science, tourism and cultural heritage. Meetings depend on the issues at hand. Meetings are not open to the public, and their role is advisory. Over the past decade, MPAs have occasionally been a topic of discussion at NPWAC meetings, with associated recommendations being made to the Minister on the representativeness of the system and the resources allocated to MPA planning and management (Lockwood, M. pers. comm. 2016).

The Tasmanian planning system has undergone a series of changes over time. The most significant was the establishment of the Resource Management and Planning System in 1993. This framework aims to integrate laws, policies and procedures to achieve environmental sustainability, but also to provide for public involvement (Environmental Defenders Office 2014). Several planning issues, including the reservation of land for conservation purposes, are considered through specific public inquiries. The TPC, created in 1997, is responsible for

inquiries into public land planning, including reservation. Inquiry processes follow the steps outlined in the *Public Land (Administration and Forests) Act 1999* (Figure 4.2). Before producing final recommendations reports, the TPC invites the public to comment on each of the preliminary documents exhibited. Submissions on each of these documents are considered for the next step in an inquiry. These inquiries are not on-going discussion arenas, but specific consultations, limited in time and scope. Certain activities and specific cases have been exempted from this consultation process. For example, a specific Act, the *Pulp Mill Doubts Removal Act* was developed to override some of the consultation requirements, to make more expedient the Tamar Valley pulp mill assessment (Gale 2008).

Figure 4.2 Steps in a planning inquiry process in Tasmania

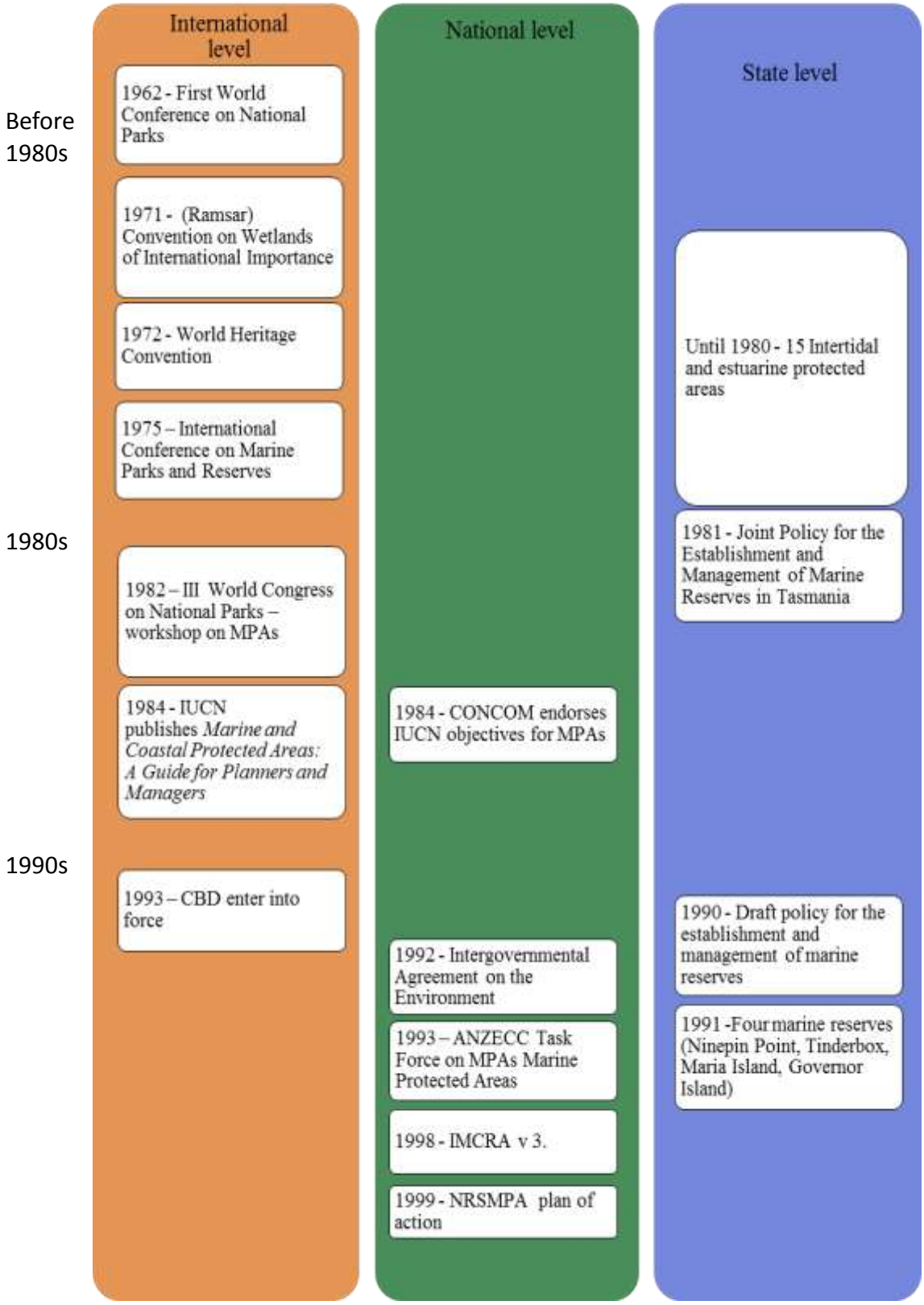


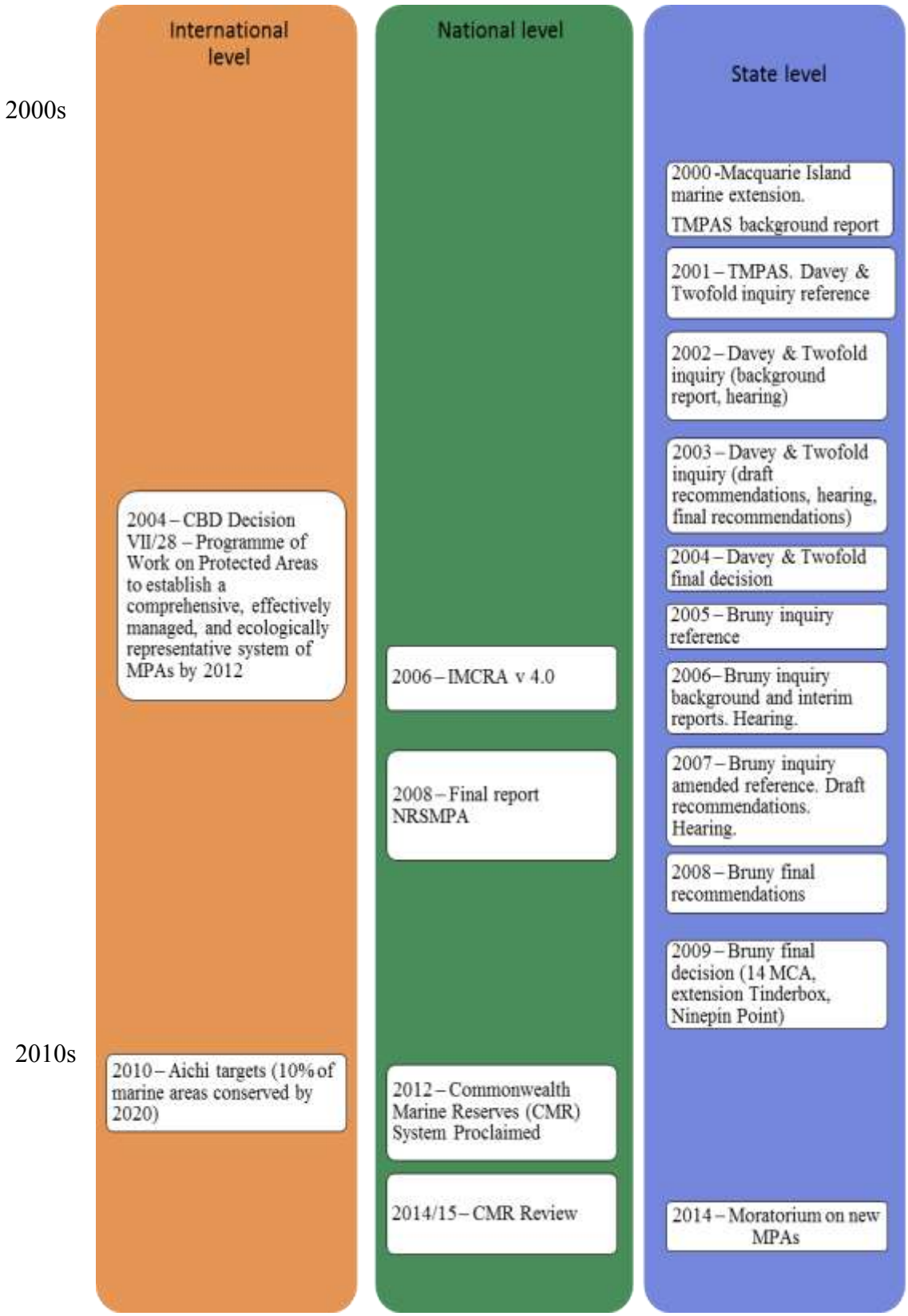
Source: (Tasmanian Planning Commission n.d.)

4.4 The development of the Tasmanian MPA system

Adjustments in the planning framework over time means that early designation processes followed different procedures. Figure 4.3 shows a timeline of the development of MPAs in the State, in relation to major milestones at the national and international levels. Major events are then explained in detail.

Figure 4.3 Timeline of the MPA process in Tasmania in relation to developments at the national and international levels.




International level
National level
State level
2000s
2000 -Macquarie Island marine extension.
TMPAS background report
2001 – TMPAS. Davey & Twofold inquiry reference
2002 – Davey & Twofold inquiry (background report, hearing)
2003 – Davey & Twofold inquiry (draft recommendations, hearing, final recommendations)
2004 – Davey & Twofold final decision
2005 – Bruny inquiry reference
2006 – Bruny inquiry background and interim reports. Hearing.
2007 – Bruny inquiry amended reference. Draft recommendations. Hearing.
2008 – Bruny final recommendations
2009 – Bruny final decision (14 MCA, extension Tinderbox, Ninepin Point)
2004 – CBD Decision VII/28 – Programme of Work on Protected Areas to establish a comprehensive, effectively managed, and ecologically representative system of MPAs by 2012
2006 – IMCRA v 4.0
2008 – Final report NRSMPA
2010s
2010 – Aichi targets (10% of marine areas conserved by 2020)
2012 – Commonwealth Marine Reserves (CMR) System Proclaimed
2014/15 – CMR Review
2014 – Moratorium on new MPAs

Until 1991, only coastal and estuarine areas were declared as reserved land (Ivanovici 1984). Conclusions of a scientific assessment of most regions around Tasmania were the base of subsequent designation of marine reserves (Edgar 1984). In 1990, a draft MPA policy was released, and the first marine reserves, Ninepin Point, Tinderbox, Maria Island and Governor Island, were proposed. After public consultation, including a series of meetings in Bicheno, Triabunna and Woodbridge (Kriwoken and Haward 1991), these were declared in 1991. In 2000, the Macquarie Island Nature Reserve was extended to include 74,738 hectares.

In 1999 the Marine and Marine Industries Council was formed. In 2000, it produced a Background Report for the MPA strategy and in August 2001, the TMPAS was adopted. The intention of this strategy was to provide guidance on the establishment of a comprehensive, adequate and representative system of MPAs. The legal framework was not changed or adjusted to support this goal.

The Government decided to approach the establishment of an MPA system bioregion by bioregion (see bioregions below, under "natural context"). The first two bioregions, Davey and Twofold Shelf, corresponded to areas of conservation significance according to previous surveys (Edgar 1984). As the TPC was already in place, in August 2001 the Minister for Primary Industries, Water and Environment sent it a reference to initiate an inquiry into these two regions. The reference limited the inquiry to TSW around the Kent Group of Islands in the Twofold Shelf Bioregion, and to a fraction of the Davey Bioregion, namely Port Davey and Bathurst Harbour. In October 2002, the TPC delegated its functions to a panel. This panel consisted of four members, including one commissioner, two scientific experts and a representative of the fishing industry. Following the steps in Figure 4.2, a Background Report was prepared and exhibited for public comment in April 2002. In November that year, a hearing allowed the Commission to gather extra information to prepare the Draft Recommendations. Individuals and organisations who made submissions were invited to participate, as well as those who the Commission considered could improve the information they needed. Draft Recommendations were exhibited in March 2003. A public hearing in June 2003 assisted the Commission to assess the comments from submissions. In July 2003, the Final Recommendations Report was sent to the Minister, justifying the boundaries and levels of protection proposed. The final decision was announced in February 2004.

In June 2005, the Minister for Environment and Planning issued a reference to the Commission to undertake an inquiry into the establishment of MPAs in the Bruny Bioregion. This reference

was amended in August 2007 to extend the time of the inquiry and to exclude the Ralphs Bay Conservation Area from the inquiry, due to an interest in a marina development (Prahalad and Kriwoken 2010). In this case, the Commission also delegated its functions to a Panel, which members were commissioners and advisors with specific expertise. It additionally established a Reference Body of scientific experts to provide further advice. Most interviewees referred to "the Panel" during this study, and I assumed that they referred to both members of the Panel and the Reference Body, present during the hearings. A Background Report was exhibited in June 2006, followed by a hearing in November. In March 2007, an Interim Report was exhibited, followed by the Draft Recommendations Report in August. Another hearing in November 2007 provided additional information before the Final Recommendations Report was presented to the Minister in February 2008. The final decision was gazetted in December 2009.

In the Final Recommendations Report, the Commission acknowledged that the Bruny Bioregion was the most complex of all Tasmanian bioregions. Specifically, it has a diversity of habitats, and a high number of species with restricted ranges. At the same time, it has a concentration of industrial activities, commercial fishing, marine farming, tourism and recreation. The diversity of activities is also related to a diversity of attitudes towards protected areas. The Commission tried to balance conservation and extractive activities, and while the Minister's final decision roughly respected proposed boundaries, it disregarded the proposed levels of protection. All new areas were designated as MCAs, which are IUCN Category VI[7]. The extraction of "fish", as defined by LMRMA, has not been regulated inside these areas, so that the level of protection is similar to non-reserved waters.

Since then, the State has made no further progress in the designation of new MPAs, and very little to improve effectiveness of those that exist. Most areas do not have a management plan, except for Macquarie Island (2006) and Maria Island (1998). The Kent Group Management Plan (2005) explicitly excludes the marine portion. The Tasmanian Wilderness World Heritage Area Management Plan (1999), which includes Port Davey and Bathurst Harbour, is in the final stage of being updated. The rest of the existing MPAs do not have a plan to guide their management. Management strategies in the current management plans have not been implemented. For example, the Maria Island Plan suggested that the whole range of marine habitats should be protected and the Macquarie Island Plan stated that a consultative committee should be created. None of these prioritised actions have been implemented. Until recently, a

[7] Protected area with sustainable use of natural resources (Dudley 2008).

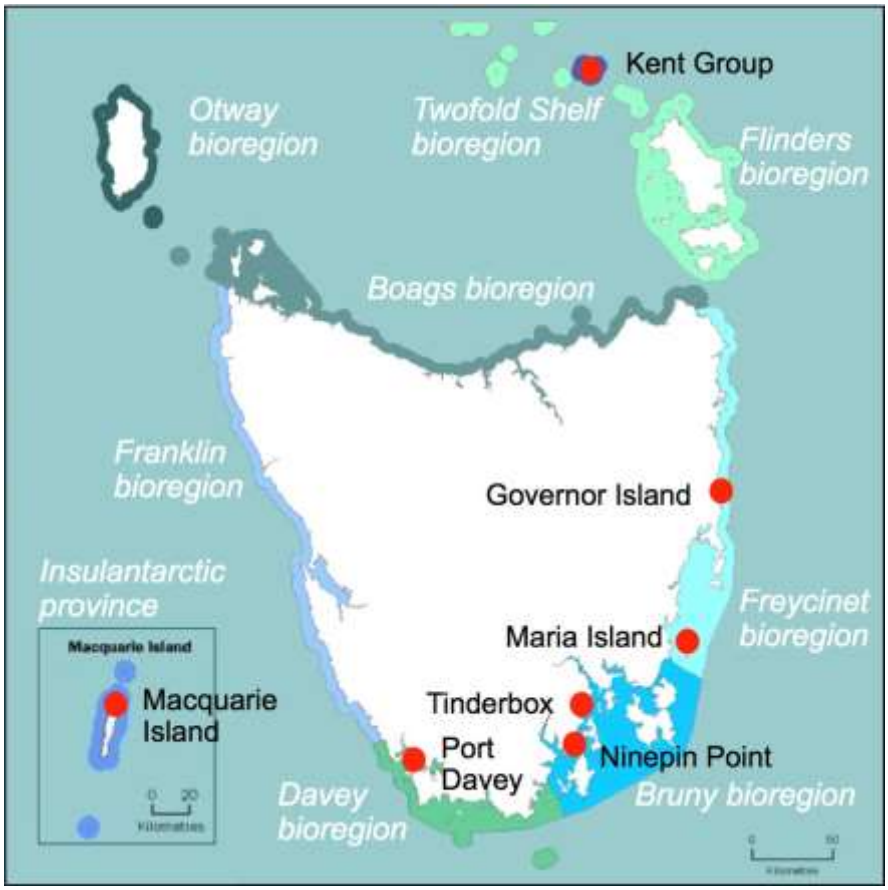
marine officer based in Bicheno was responsible for all marine reserves in the State, but at the time of writing, there were no staff within PWS assigned specifically to deal with marine issues.

Table 4.10 briefly describes MPAs in Tasmania. Including Macquarie Island Marine Reserve, approximately 135,000 ha are protected, representing 5.75% of TSW. Excluding this remote area, the percentage around Tasmania is approximately 2.67%, but if only no-take zones are considered, this percentage shrinks to 1.12% (Kriwoken 2016). Although the original intention of the State Government was to replicate the consultation process in all bioregions, four bioregions, Boags, Flinders, Franklin, Otway, have to date no representation. Previous Labor Governments made little progress after the Bruny Bioregion process, even though their policy platform supports the TMPAS (Labor 2014). The current Liberal Government has no plans to advance on the establishment of an MPA system (Tasmanian Liberals).

Table 4.10 Description of Tasmanian MPAs

Name	Description
Tinderbox Marine Reserve	Proclaimed 1991. Extended 2009. Area: 144 ha Bruny Bioregion
Maria Island Marine Reserve	Proclaimed 1991. Area: 1,878 ha (1,282 ha as no-take). Freycinet Bioregion Part of Maria Island National Park.
Ninepin Point Marine Reserve	Proclaimed 1991. Extended 2009. Area: 732 ha. Bruny Bioregion
Governor Island Marine Reserve	Proclaimed 1991. Area:60 ha Freycinet Bioregion
Kent Group Marine Reserve	Proclaimed 2004. Area: 29,000 ha (13,837 ha as no-take) Bruny Bioregion Part of Kent Group National Park
Port Davey Marine Reserve	Proclaimed 2004. Area: 17,753 (9,943 ha as no-take). Bruny Bioregion Part of the Southwest National Park
Macquarie Island Marine Reserve	Proclaimed 2000. Area: 74,738 ha. Macquarie Island Province Part of Macquarie Island Nature Reserve and adjacent to the Commonwealth Macquarie Island Marine
Bruny Bioregion - Marine Conservation Areas	14 MCA proclaimed 2009: Opossum Bay, Monk Bay, Cloudy Bay, Central Channel, Simpsons Point, Roberts Point, Huon Estuary, Hippolyte Rocks, Sloping Island, Waterfall – Fortescue, Blackman Rivulet, South Arm, Port Cygnet, River Derwent. Area: 11,766 ha. Bruny Bioregion No zoning or specific management strategies have been proposed since designation. They offer little additional protection for marine resources when compared to non-reserved waters.

Figure 4.4 Map of Tasmanian Marine Reserves and Marine Conservation Areas



Source: (Kriwoken 2016)

4.5 Political context

The recent political arena in Tasmania has been dominated by Labor (1976, 1979, 1989, 1998, 2002, 2006, 2010) and Liberal (1982, 1986, 1992, 1996, 2014) governments. Labor's official position on MPAs has been "balanced", supporting their development "whilst providing fair and equitable access to all those with interests in fish and fishing" (Labor 2014). In fact, most MPA developments occurred during Labor governments. The current Liberal party policy position, on the other hand, is openly against the designation of any new MPA (Tasmanian Liberals). However, even during Labor governments, Hislop (2004) maintains that MPA interest was mainly limited to pre-election rhetoric and that progress was actually minimal, or at best slow, once in power. The Greens' policies strongly support the development of MPAs and a more participatory approach. The Greens, however have only had marginal influence, particularly during minority governments in 1989, 1996 and 2010. During the Labor-Green Coalition in 2010, the Greens held positions in Cabinet, although not related to natural resource management.

One of the consequences of a political system with incomplete separation of executive and legislative powers is that decisions are highly politicised. Decision makers are typically politicians whose position in Parliament is dependent on the next voting period; there is then a strong incentive to make decisions that will show positive electoral results in the short-term. Accordingly, long-term impacts of those decisions can be under emphasised or overlooked. This focus on short-term outcomes is discussed in Chapter 5 to 8.

4.6 Socio-economic and cultural context

Tasmania had a population of 516,600 in June 2015 (Australian Bureau of Statistics 2015); 40% of this population is settled in Hobart and surroundings, and another 40% inhabit Launceston and the North-West coast. The rest of the population is scattered in sparsely populated small towns, with the lowest density along the West and South-West regions (Tasmania Top Ten 2011). The growth rate in Tasmania is low (0.4%) with a significant portion of young people (15-29 years old) emigrating to the mainland or overseas.

Tasmania consistently has a low level of economic performance when compared to the rest of Australia. Having a small economy, Tasmania is also subject to more pronounced periodic

variations than other regions in Australia. A high proportion of Tasmania's production is export-oriented, which results in external forces having a strong influence on Tasmania's economy. These external forces include the exchange rate and commodity price movements. These cycles are closely related to population levels, creating vicious and virtuous cycles; when the economy is low, more people emigrate, and a lower population slows the economy; on the other hand, when the economy grows, more people are attracted to live in Tasmania, and a larger population helps the economy to grow even more (Bureau of Infrastructure Transport and Regional Economics 2008). Skilled labour also has an impact on these cycles, and the fact that the population seems to be "maturing", further affects potential external investment (West *et al.* 2012).

The economy in Tasmania has been historically linked to the extraction and export of natural resources. Forestry, for example, has a long history in Tasmania, having been one of the main economic sectors for many years. Very early on, in 1885, Tasmania started to regulate forestry activities and research (Elliott *et al.* 2008). Due to several factors, forestry has gradually decreased its contribution to the State Gross Product and employment levels (Krien 2010). Being an island, the extraction of marine resources has also been important. For early European settlers, whaling and sealing were prosperous ventures, attracting many people in search of financial opportunities. By the end of the 1800s, however, the stocks had been depleted to the point that most operations were no longer profitable (Crowther 1919; Parks and Wildlife Service 2008). Prior to the current system of fisheries management, a lack of regulation accelerated the decline in catches of some fisheries, such as crayfish or rock lobster (*Jasus edwardsii*) and scallops (*Pecten fumatus*) (Harrison 1994). Today, most fisheries in Tasmania are regarded by the Department of the Environment as sustainable (Department of the Environment). Fisheries contributed around A$152 million to the State's economy in 2012. The largest contributors were wild-caught abalone (A$84 million) and rock lobster (A$63.4 million), most of which were exported to China (Tasmanian Seafood Industry Council 2014). To put it in perspective, Bennett *et al.* (2015) calculated that these two fisheries in the Southern Reef (temperate reefs of South Australia, Victoria, Tasmania and the South of New South Wales) are worth over four times all commercial fishing operations in the Great Barrier Reef.

Agriculture and aquaculture have been identified as some of the most promising sectors for diversifying the economy, both for their current contribution and for their innovation capacity (West *et al.* 2012). In particular, the growing marine farming sector contributed over A$500 million dollars to the State economy in 2011-12 (Tasmanian Seafood Industry Council 2014).

The natural resources of Tasmania are the base of the more recent tourism industry. Tourism has grown substantially, becoming a key element of the economy in Tasmania, particularly nature-based tourism. Tourism contributes over A$1 billion to the Gross State Product, and employs 16,000 and 22,000 people directly and indirectly (Tourism Industry Council Tasmania 2013). An important fraction of the tourism development benefits for coastal communities is driven by an interest in ocean activities, such as diving, fishing, surfing and whale watching (Bennett *et al.* 2015). In Tasmania, around 5,000 tourists participate in diving or snorkelling activities, over 15,000 sail and/or kayak, and more than 25,000 fish (Tourism Tasmania 2015). While tourism has grown rapidly over the last few years, and is currently an important component of the economy, the analysis by West *et al.* (2012) suggests that it has a low innovative capacity; this would make it less competitive in the face of external factors, when compared with other countries and regions. Recent recognitions, however, suggest otherwise, as Tasmania won more medals than other states and territories in the Qantas Australian Tourism Awards 2015 and was in the top ten regions to visit according to Lonely Planet in 2015 (Tourism Tasmania 2015).

Bennett *et al.* (2015) calculate that there are many economic benefits derived from the marine environment in the Southern Reef that are not accounted for in traditional economic indicators. For example, they highlight that the substantial productivity, which is often higher than intensive agricultural systems, supports not only important commercial fisheries, but also recreational fisheries. In the last report on recreational fisheries in Tasmania, Lyle *et al.* (2014b) estimated that around 98,000 people fished during the previous year, of which 91% fished in saltwater. There are approximately A$439 million invested in boats, and during 2012-13 the expenditure was A$93 million on goods and services related to fishing.

Other benefits derived from the ocean that are usually unaccounted for include: climate regulation, carbon stocks, and recreation and well-being (Bennett *et al.* 2015). Australians have a strong connection with the coast and the ocean (Hammer 2012). This is reflected in the high proportion of the Australian population (85%) living within 50 km from the coast; this proportion is even higher (99%) in Tasmania (Australian Bureau of Statistics 2006). A survey in 2000 indicated that around 18,500 and 17,000 Tasmanians participated in kayaking and diving/snorkelling activities respectively (Australian Bureau of Statistics 2000). Your Marine Values project identified what local residents in the lower Huon Estuary and D'Entrecasteaux Channel in Tasmania valued most about their coastal and marine environments. Seventeen

values were highlighted, ranging from Aboriginal, to social, economic and ecological aspects (Ogier and MacLeod 2013).

This economic and cultural context influences the MPA governance system in several ways. The economy of the State is small and vulnerable to external forces. For this reason, it is expected that politicians give priority to development, rather than conservation. The only exception is when there is a strong link to an economic activity, as in the case of nature-based tourism. Diving, however, is not considered an important economic activity, and therefore marine resources are not valued for their contribution to such tourism-related activities. A divide between development and conservation is particularly apparent in Tasmania, given the economy is strongly connected to the extraction of natural resources. Kellow (1989) suggests that in fact certain pro-development positions are already embedded in existing institutions. Assumptions that inform decisions can therefore be biased, even if they are not apparent, explicit or even conscious.

Another important influence is the large proportion of Tasmanian recreational fishers. Members of this sector have been among the most notorious opponents to MPAs, although the policies of the representative body accept them under certain conditions (TARFish n.d.). As recreational fishers can potentially make an appreciable difference to electoral outcomes, it is not surprising that politicians pay particular attention to their perceived preferences. On the other hand, fishers and others who enjoy beach and water activities, or who live next to the sea, usually have an interest in marine and coastal conservation. Not surprisingly, there are many local volunteer groups along the coasts of Tasmania focusing on conservation activities. This interest in the health of marine ecosystems and species, under certain circumstances, can result in important political support for MPAs or other relevant conservation measures.

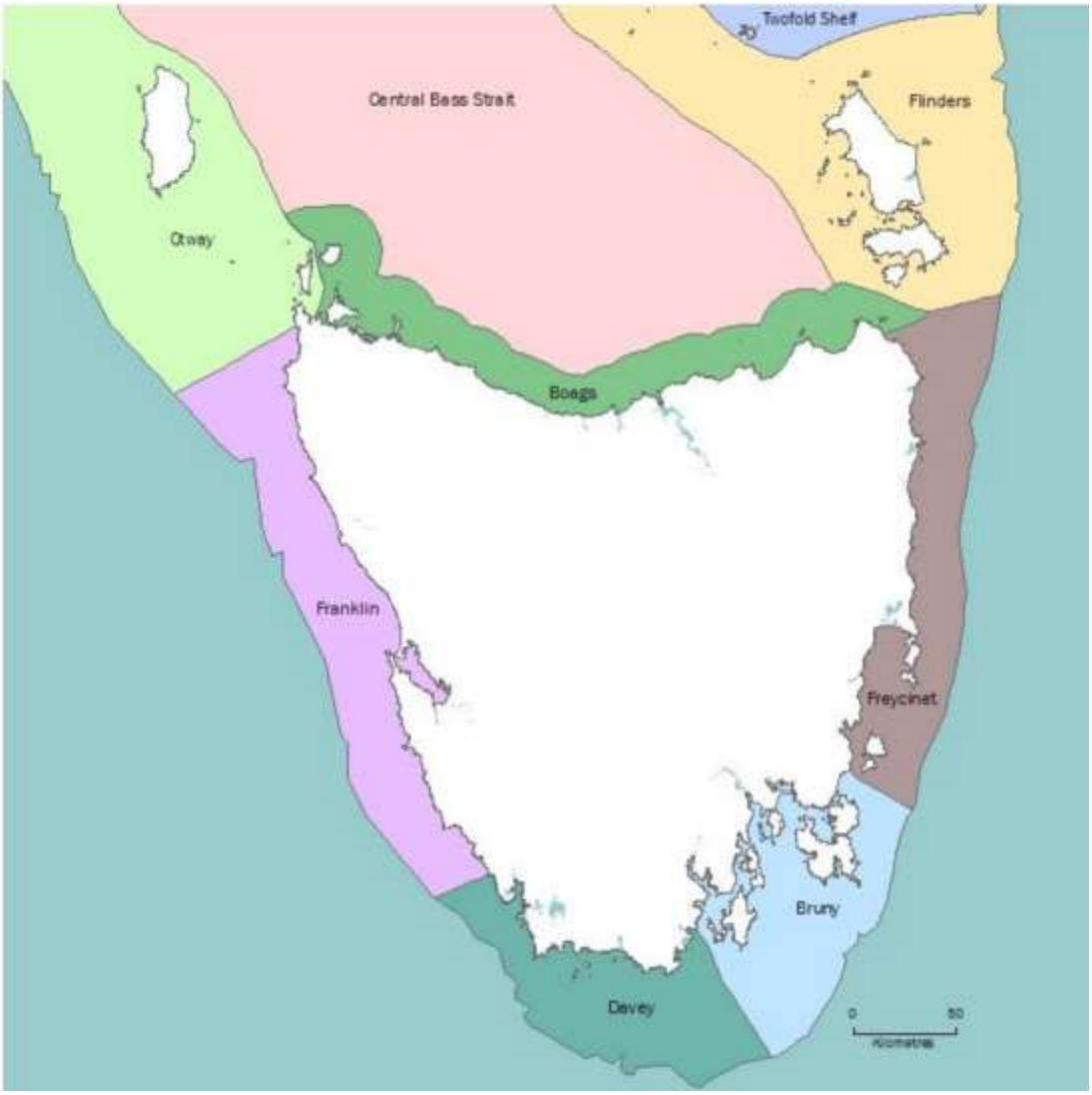
4.7 Natural context

The Australian continent has been isolated from other landmasses for millions of years. The tropical marine fauna and flora have mixed with those of the Indo-Pacific since 10-15 million years ago, when the tectonic plates collided (Butler *et al.* 2010). The southern temperate regions of Australia, however, have remained isolated for over 65 million years (Poore 1995). Biogeographical, ecological and evolutionary factors have allowed the development of a unique ensemble of species (Phillips 2001) in what Bennett *et al.* (2015), called the “Great Southern

Reef". Considering only faunal species, the South-Eastern Marine Domain is the third most speciose of Australia, after the East-Central and North-Eastern Domains (Butler *et al.* 2010). Moreover, levels of endemism are much higher for the southern regions, possibly reaching 90% (IMCRA 1998; Butler *et al.* 2010). Certain taxonomic groups are more diverse in the southern regions of Australia, including macroalgae (Womersley 1990; Phillips 2001; Poloczanska *et al.* 2012), Porifera and Annelida (Butler *et al.* 2010).

Tasmania is part of the Southeast Australian Shelf Marine Province (Spalding *et al.* 2007). The Integrated Marine and Coastal Regionalisation for Australia (IMCRA 1998) identified eight mesoscale bioregions around Tasmania: Boags, Central Bass Strait, Otway, Franklin, Davey, Bruny, Freycinet, Flinders and Twofold shelf bioregions (Figure 4.4). Additionally, Tasmania has jurisdiction over the coastal waters around sub-Antarctic Macquarie Island. The Macquarie Island Province encompasses both coastal and off-shore waters (IMCRA 1998).

Figure 4.5 Meso-scale Bioregions in Tasmanian waters



Source: (Resources Planning and Development Commission 2003b)

The diversity of Tasmanian marine bioregions is influenced by the interplay between climate, oceanography, bathymetry and biogeography (Parsons 2011). Average sea-surface temperatures are typically 10-12^{0}C in winter and 15-20^{0}C in summer, although differences of more than 4^{0}C have been reported across the State (Harris *et al.* 1987). These temperatures, however, are variable depending on seasonal events, freshwater input, geographic features and most importantly, oceanographic currents. The major currents that influence the island are the Eastern Australian Current, the Zeehan Current and the Antarctic Circumpolar Current. The latter is a cold nutrient-rich current that moves mainly eastward (Department of Primary Industries Water

and Environment 2000). The Zeehan Current is the last section of the 5,500-km Leewin Current. The Leewin Current flows southward along the western coast of Australia, then eastward along the southern coast of Australia, to finally flow southward along the West coast of Tasmania (Ridgway and Condie 2004)–. The East Australian Current is the major current flowing southward along the east coast of Australia. It has a seasonal variation, having a stronger influence in Tasmania during summer (Ridgway and Godfrey 1997). The latter two currents bring warm nutrient-poor waters. In general, the west coast of Tasmania is a high-energy coastline, with significant swells.

The east coast has much lower wave energy, being affected by the predominant southwest winds and low-pressure fronts (Department of Primary Industries Water and Environment 2000). The east coast, however, has a more convoluted coastline, which determines the presence of several estuaries and inlets (Edgar *et al.* 2000). Estuaries are a key habitat, due to their role as nursery and feeding areas for commercial and non-commercial species (Resources Planning and Development Commission 2003b). The central Bass Strait has the lowest wave-energy, as it is protected from predominant swells and because shallower waters allow the dissipation of wave energy (Department of Primary Industries Water and Environment 2000). This variety of conditions determines that major marine biomes can be distinguished between the Bass Strait, the north, east and western coasts (Edgar *et al.* 1993; Department of Primary Industries Water and Environment 2000). The SEAMAP project mapped a large extent of Tasmanian habitats using a combination of methods, including acoustic surveys, remote sensing and video (Institute for Marine and Antarctic Studies 2011). The main habitat types identified are rocky reef (high, medium or low profile), unvegetated unconsolidated substrate (gravel, sand, silt, cobble) and vegetated unconsolidated substrate (seagrasses, algal beds, aquatic macrophytes). Parsons (2011) provides a good overview of the marine biodiversity of Tasmania, including species, habitat types and sites with particularly high conservation value. Table 4.11 describes the main characteristics of Tasmanian bioregions.

Table 4.11 Characteristics of Bioregions around Tasmania

Province/ Biotone	Bioregion	Characteristics	Mean number of species (fish, invertebrates and plants)
Tasmanian Province	**Franklin**	Extremely exposed, open coastline, long sandy beaches and rocky headlands. High energy and dark estuary waters may explain its low diversity. Low anthropogenic impact. Important for birds. High value sites include Macquarie Harbour, one of the largest estuarine systems in Australia with a highly stratified water column and habitat to the endangered Maugean skate (*Zearaja maugeana*). Other sites include the Sloop Rocks and the unique Wanderer estuary. Tidal range: 1.5 m. Habitats: seagrass (0%), sand (61.9%), reef (38%).	27.1
	Davey	Extremely exposed coastline, rocky headlands, sandy beaches, with a strong influence of the Southern Ocean. Pristine conditions. In high-energy areas, bull kelp is found much deeper than is usual. Port Davey/Bathurst Harbour is one of the high value sites, recognised as World Heritage. Unique conditions, with a shallow entrance, a deep channel and a significantly isolated harbour. High stratification, with a tannin layer at the surface and a clear salt-water layer at the bottom. Typical deep-water species are found here in shallow waters. High endemism and unique invertebrate communities. Other high value sites include Maatsuyker and Pedra Branca Islands, key areas for birds and seals, including endangered elephant seals (*Mirounga leonine*) and shy albatross (*Thalassarche cauta*). Tidal range: 1 m. Habitats: seagrass (2.5%), sand (49.8%), reef (47.8%).	34
	Bruny	Dissected coastline with large numbers of protected bays, headlands, estuaries and cliffs. Exposure is therefore variable. Mostly influenced by nutrient-rich subantarctic waters. Two large drowned-river estuaries (Huon and Derwent) have an effect on sediments, salinity and nutrient levels. Presence of cold-water species not found further north, and high species richness and endemism, including endangered species such as the live-bearing seastar (*Parvulastra vivipara*) and handfish species (Brachionichthyidae). High value sites include the Huon estuary entrance, where a tannin layer combined with high nutrients from the Southern Ocean result in a unique ensemble of species. Other high value sites include Bruny Island headlands; Pittwater/Orielton Lagoon as a key saltmarsh and shark nursery area; Tasman Peninsula, with outstanding cliffs and caves and high diversity, including deep-water species like the Southern Bluefin Tuna (*Thunnus maccoyii*) and Albacore (*Thunnus alalunga*), as well as kelp forests (*Macrocystis pyrifera*). Tidal range: 1 m. Habitats: seagrass (3%), sand (82.7%), reef (14.3%).	48.4
	Freycinet	Relatively exposed, with rocky headlands, beaches and lagoons. Species communities vary along the coast according to the level of influence of the East Australian Current. The northernmost kelp forest in the Southern Hemisphere is found here. Lagoons and estuaries are important habitat for birds. High value sites include Schouten Island; Ile the Phoques with a unique cave system; the Georges Bay native oyster reef; Maria Island with the highest diversity of reef plants and animals in Tasmania; and Governor Island.	43.8

Province/ Biotone	Bioregion	Characteristics	Mean number of species (fish, invertebrates and plants)
		Tidal range: 1.5 m. Habitats: seagrass (3.3%), sand (78.4%), reef (18.3%).	
Bassian Province	**Boags**	Sheltered open coastline, long sandy beaches and rocky headlands. Shallow areas and strong tidal currents. Important marine and shorebird habitats. Extensive seagrass beds, including the southernmost distribution of warm temperate species. High diversity, including Bass Strait species rare in southern bioregions. Rocky cape, the Tamar estuary and Waterhouse are considered high value sites. Tidal range: 3 m. Habitats: seagrass (11.4%), sand (75.3%), reef (13.3%).	48.6
	Flinders	Rocky coastline with sandy beaches on shallow areas. Exposed on the east of Flinders Island, moderate to low exposure elsewhere. Large number of estuaries with high conservation value and extensive seagrass beds. Important bird habitats and key breeding area for the Australian Fur Seal. Species not present in other regions. High value areas include the North East Inlet and the west coast Furneaux seagrass beds, Judgement Rocks, and Franklin Sound. Tidal range: 3 m. Habitats: seagrass (10.5%), sand (82.5%), reef (7%).	42.9
	Twofold Shelf	Relatively exposed with long sandy beaches, rocky headlands and lagoons. Sea surface temperature influenced by East Australian Current. The Kent Group is considered a high value site, as the convergence of three provinces, diversity of habitats and good water quality support a high biodiversity, with many species not found in southern bioregions. This includes an unusual coral community. Tidal range: 2 m. Habitats not mapped.	51.4
West Bassian Biotone	**Otway**	Exposed, steep coastline. Strong currents associated to the entrance to Bass Strait. Connected to South Australia and Victoria through the Leeuwin current, sharing some marine biota. Important for high-energy and oceanic species. High value sites include King Island, with diversity of marine habitats and bird breeding areas; and the Seabird Islands with their colonies of shy albatross and other birds, as well as Otariids. Tidal range: 0.6 m on the West coast and 1.2 m on the East coast. Habitats not mapped.	44.8
Macquarie Island Province	**NA**	It comprises waters surrounding Macquarie Island and seamounts. The biota is a mixture of Antarctic and cool temperate elements. Important for endangered marine birds (albatross and penguins) and mammals. Along with the Commonwealth Macquarie Island Marine Park, it has been included in the World Heritage List. Tidal range: 1m Habitats not mapped.	NA

Modified from Department of Primary Industries Water and Environment (2000); Parsons (2011).

There are several implications on MPA governance of a natural context characterised by high diversity, high endemism and rapidly changing conditions. For example, when species have small or patchy distributions, conservation actions need to include local actors, be specific in location and address threats particular to those species. On the other hand, as will be detailed in the next section, certain threats span over great expanses of the oceans. In this case, good coordination across all governance levels, from the local, State and regional, is fundamental to managing marine resources. The need to have good coordination across levels is not limited to governance regimes, but also for monitoring and sharing of information. Changing conditions, accelerated by climate change, require a governance regime that is prepared to deal with those changes (Lockwood *et al.* 2012).

4.8 Problems that the governance regime needs to address

A governance regime needs to address a series of issues, including ecological, socio-economic, institutional and cultural issues, as well as their interrelations. In this section, I first address natural and anthropogenic impact on the marine environment. I then briefly discuss other issues found in the literature regarding institutional approaches to resource management. This particular component is complemented by specific findings of this thesis, presented and discussed in subsequent chapters.

Different pressures and impacts on the marine and coastal environment act synergistically. For this reason, they should be addressed in an integrated manner. Some of the main threats identified in Tasmania include: climate change and related impacts; siltation and pollution; invasive species; direct and indirect impacts from fishing; and inappropriate governance regimes (Edgar *et al.* 2000; Resources Planning and Development Commission 2003b; Edgar *et al.* 2005; Stump 2009; Lockwood *et al.* 2013).

Hobday and Pecl (2013) identify Tasmania as a climate change hotspot. One aspect that has changed over the past years is the sea level, with an increase of 0.8mm/year recorded in Maria Island (Tasmanian Planning Commission 2009). A higher sea level, especially if accompanied by more frequent storms and surges, leads to erosion of the coastal line. This has had an impact on habitats like beaches, dunes and coastal wetlands, but also on human constructions (Tasmanian Planning Commission 2009). Additionally, the main currents affecting Tasmanian oceanographic conditions, Leeuwin and the Eastern Australian, have also shown changes in

temperature and seasonal effect on Tasmanian waters (Pearce and Feng 2007; Hobday and Pecl 2013). Off Maria Island, on the East coast, an increase of approximately 2.3°C has been recorded since 1994 (Tasmanian Planning Commission 2009).

Warming waters have had an impact on the distribution of many species, with a poleward shift of plankton, macroalgae, crustaceans and several fish; at least 36 species were reported to have changes in distribution in the last Tasmanian State of the Environment report (Tasmanian Planning Commission 2009). Sensitive species, like those forming kelp forests, have gradually disappeared from previous locations, as there is a limit to where they can move (Hobday *et al.* 2006). At the same time, other species from warmer regions have invaded Tasmanian waters, sometimes exerting significant ecological changes (Johnson *et al.* 2011; Last *et al.* 2011). A striking example of cascading effects of climate change and the interaction with other pressures, is the case of the sea urchin barrens on kelp beds (Johnson *et al.* 2011). The long-spined sea urchin, *Centrostephanus rodgersii*, was previously absent from Tasmania, due to its temperature tolerance range. As sea temperatures increased, this species invaded Tasmanian waters. They consume seaweed, and in the absence of predator control, they will ultimately form barrens, completely depleted of seaweeds. Large rock lobsters consume sea urchins, exerting some control. In highly fished areas, however, large rock lobsters are absent, and sea urchins eventually deplete the seaweed. Once the seaweed is gone, rock lobster larvae are not able to settle, limiting the eventual control that they could have on urchin populations (Ling and Johnson 2012).

In addition to species with a range extension, many species have been introduced accidentally or on purpose. The Tasmanian State of the Environment report includes more than 130 marine pest species, including the northern Pacific seastar (*Asterias amurensis*), the long-spined sea urchin, European green crab (*Carcinus maenas*), several molluscs and algae (Tasmanian Planning Commission 2009). The impact of invasive species on ecological systems is difficult to predict, but research shows that major declines in certain taxonomic groups can be related (Ross *et al.* 2003). Unfortunately, controlling pests in marine environments is extremely difficult, so potential interventions are very limited.

The extraction of selected marine resources can have important effects on ecological relationships (Garcia *et al.* 2012). Commercial fisheries in Tasmania have been closely monitored and regulated over the past years through both input and output measures (Stump 2009). Most fisheries are fully exploited, but have remained stable (Tasmanian Planning

Commission 2009), except for the scallop fishery, characterised by strong temporal and spatial variability (Tracey and Lyle 2011). Most information is related to catch and effort figures, but except for the rock lobster, few species have actual stock assessments (Tasmanian Planning Commission 2009). Some fishing practices have also indirect effects, including habitat damage and bycatch.

Recreational fishing, on the other hand, has fewer restrictions and is not closely monitored (McPhee *et al.* 2002). Only certain species and fishing gear require a licence in Tasmania (lobster pots, gillnets, scallop, abalone and rock lobster diving); monitoring is therefore based on a sample of the entire population (Lyle and Morton 2004; Lyle *et al.* 2009; Lyle *et al.* 2014b), and it depends on the willingness of respondents to participate. In the last recreational fishing survey 2012/13, Lyle *et al.* (2014b) estimated that around 98,000 Tasmanians fished at least once that year. For some species, recreational catch estimates exceed the commercial catch. Participation rates in recreational fishing and catch effort have declined since the first survey in 2002/03. Although bag limits have decreased over the years, people are allowed to fish as many times as they want during the open season, and the number of licences issued in a single year has no limit. Recreational fishing is therefore, an open-access extractive activity (McPhee *et al.* 2002). The current licence system was introduced in 1995 for high-value or high-impact fisheries. Since then, licences for lobsters have increased from approximately 8,500 to 15,000 in 2002/03, to 83,000 in 2012/13. The number of abalone licences has equally increased since then (Lyle and Morton 2004; Lyle *et al.* 2014a). For instance, despite closures and bag limits, rock lobster populations in the Eastern Region have not rebuilt. Recently (end of 2015), this triggered the need to further decrease the bag limit to only two per day.

Recreational gillnetting has also raised concern, because gillnets in general can have significant impacts on the environment. They are not selective and can catch juveniles and unwanted species, and lost nets can become "ghost nets" (Edgar 1984). Several restrictions have been introduced to reduce the overall impact, such as banning night netting and reducing soak times. Despite this, (Lyle *et al.* 2014a) found that gillnetting has a high impact on both targeted and non-targeted species, including endangered species.

Pollution and siltation can also have an important impact on marine ecosystems, particularly those close to shore and those with low rates of water turnover (Edgar *et al.* 2000). Impact level is closely related to the proximity to centres of human population and agriculture/industrial areas. The most affected regions in Tasmania are the Derwent and the Tamar estuaries (Edgar *et*

al. 2000; Tasmanian Planning Commission 2009). Pollution on the Derwent remains relatively high, even though control and treatment of effluents of heavy metals and organic matter are increasing (Coughanowr *et al.* 2015). The low population levels and high conservation status of the West and Southwest regions of Tasmania, result in highly pristine wetlands (Edgar *et al.* 2000).

Lists of endangered species can contribute to biodiversity conservation if they are used to set specific plans for recovery or protection, to establish monitoring priorities and set criteria to regulate development. The list of marine endangered species of Tasmania, however, is short (35) when compared to terrestrial species. Marine species listed correspond mainly to marine mammals, birds and large fish, while some extremely rare species are not included (Edgar *et al.* 2005). Extinction rates in marine environments can be naturally much lower than in their terrestrial counterparts (Roberts and Hawkins 1999). The small number included in the official Tasmanian list, however, might be a result of limited knowledge and status assessment, rather than low impact (Edgar *et al.* 2005). For example, only three handfish species have been included in the list, but Last and Gledhill (2009) suggest that up to 11 species occur in Tasmania. Given their life history and shrinking distribution, probably all species deserve to be included in the list. Edgar *et al.* (2005) analysed the few databases that contain historical data. They conclude that marine extinctions may not be as rare as previously thought, but it is possible that they go unnoticed. The national and State efforts to evaluate the state of the environment lack appropriate indicators to understand the response of marine communities to the various threats.

One of the main issues highlighted in the Tasmanian State of the Environment report is that the lack of information prevents an appropriate assessment of status (Tasmanian Planning Commission 2009). Most indicators focus on pressures, and they tend to be increasing. Low research and monitoring investment has been highlighted as one of the drivers of limited information to support appropriate management (Edgar *et al.* 2005; Bennett *et al.* 2015). Monitoring is an essential component of adaptive management, necessary to face changing conditions. Governance arrangements are considered inappropriate to deal with marine environmental problems, particularly facing rapid changing conditions that include climate change, but also emergent pressures. From the requirements identified by Lockwood *et al.* (2012), the adaptive capacity of the Tasmanian governance regime was considered to be mostly poor (Lockwood *et al.* 2013). This is consistent with the findings of the State of the Environment report, which highlighted as the main issues: lack of "whole of government"

direction; confusion and misunderstandings about environmental policies; and lack of clear lines of responsibility/accountability. The State of the Environment report Australia further calls for better coordination across the national, state/territory and local levels of governance, and better efficiency and effectiveness in environmental action (SOE 2011). An integrated approach to conservation would be particularly important considering that MPAs cannot control external threats, such as climate change, pollution and invasive species. Additionally, given that Tasmania has a high number of endemic species with quite limited distributions, localised approaches are sometimes needed.

4.9 Chapter summary

In this chapter I presented an overview of the core components and context of the Tasmanian MPA governance regime. The key points from this overview are:

Instruments: There are national and international tools that support the creation of MPA systems, but states are mostly autonomous regarding their jurisdictional waters. There is limited integration of policies across sectors or government levels. The Tasmanian MPA system is not ecologically representative, and there are important deficiencies in the governance regime.

Actors: The main sectors include elected government and bureaucracy, commercial and recreational fishers, conservation organisations, divers, research and tourism. Aboriginal interests were beyond the scope of this study.

Decision arenas: There are no official, on-going forums to discuss MPAs or other marine conservation tools, other than to discuss fisheries-related issues. Consultation processes have been ad-hoc.

Political context: Labor and Liberal parties have dominated the recent political arena in Tasmania. Labor's policies support MPAs under certain conditions, but progress in establishing an MPA system was slow. The Liberal party openly opposes the designation of new MPAs. The political system determines that decisions tend to be politicised, and Ministers usually prioritise short-term results.

Socio-economic context: Tasmania is characterised by a small economy, which has been strongly dependent on the extraction of marine resources. Activities that represent a short-term economic benefit are therefore prioritised in politics.

Cultural context: In Tasmania there is a significant connection to the coast and the marine environments. Recreational fishing is an important activity, with approximately 98,000 fishers in 2013, giving them significant political leverage.

Natural context: Tasmania is characterised by significant marine diversity and endemism. A high productivity has sustained valuable fisheries.

Problems: Tasmania is a climate change hot-spot, with synergistic impacts from climate change, invasive species, fishing and pollution. Research and monitoring are not appropriately funded, and there are significant information gaps and uncertainties. There are regime deficiencies to deal with change and for an integral approach to marine sustainability.

This overview of the case study puts the findings of the next two chapters in perspective. Chapter 5 focuses on governance quality, mostly based on qualitative information derived from semi-structured interviews. Chapter 6 shows results of analyses that aimed to understand the effect that power structures have on governance.

Chapter 5 Analysis of Tasmanian marine protected areas according to good-governance principles

Governance of MPAs in TSW is primarily the responsibility of the State Government and its departments and agencies. The quality of governance determines in part if protected areas are supported by the community; if protected area establishment and management consider aspects other than ecological factors (social, economic, cultural); and whether there is capacity and commitment to ongoing evaluation and improvement.

In this chapter, I analyse the decision processes for MPA designation and management according to good governance criteria synthesised from the literature (see Chapter 2). In Section 5.1, I present the findings of the interview analysis for each of the components and subcomponents of good governance. Apart from clarifications and comments, the material in the Section 5.1 presents a thematic analysis of interview transcripts. In Section 5.2, I draw out the implications of these results for governance quality and Tasmanian planning processes. The chapter concludes with a summary of the findings in relation to principles of good governance (Section 5.3).

5.1 Results

I interviewed 26 key informants associated with 24 organisations. Text blocks from the interview transcripts (N=496) were coded according to the components and subcomponents of good governance in the first two columns of Table 5.1. This table also indicates the frequency with which each subcomponent was mentioned by interviewees. These data reflect relative emphasis and attention given to each subcomponent. While they are broadly indicative of issues that are foremost in the minds of interviewees, they should not be interpreted as an indication of overall importance.

Table 5.1 Frequency with which good governance subcomponents were mentioned by interviewees

Component	Subcomponent	Number of times mentioned	Number of organisations that mentioned the subcomponent (n=24)
Inclusiveness and fairness	Participation of all stakeholders	94	22
	Fairness	60	17
	Dialogue (open and rational discussions, consensus building vs polarisation)	116	22
	Engagement methods (tailored, ongoing, from the beginning)	58	18
Accountability and transparency	Information available (who, how and why are decisions made)	72	17
	Clarity of roles and processes	28	10
	Responsible bodies answer for outcomes	3	3
Legitimacy	Authority by law	25	13
	Evidence-based decisions	114	21
	Integrity (honest, stating conflict of interests, commitment, decisions not based on personal interests)	78	18
	Stakeholder support	45	17
Performance	Direction (strategic goal setting, clear guidelines)	63	19
	Appropriate skills and resources	31	15
	Efficiency and effectiveness	41	16
	Planning (operational)/ management	16	9
	Coordination/coherence/connectivity	41	13

The subcomponents of good governance that were most frequently raised in the interviews by participants were ‘dialogue’ and ‘evidence-based decisions’. The prominence of these two subcomponents reflects the relative importance that stakeholders gave to rational discussion and evidence-based decision making. These topics were often related to participants’ concerns over the influence extreme points of view had over decision-making processes. There was also concern over manipulation by politicians for party-political ends, and by the media to sensationalise issues. Considerable attention was also given to inclusiveness and fairness subcomponents. Issues related to performance, and in particular management, were not discussed as frequently, and little attention was paid to accountability of the bodies responsible for delivering outcomes. This is perhaps a consequence of the emphasis on the controversial MPA designation process for the Bruny region. In the following subsections, results from the interviews are presented, structured according to each component and associated subcomponents.

5.1.1 Inclusiveness and fairness

Meaningful involvement requires that communication and engagement methods be tailored to the specific circumstances, involving stakeholders in a constructive, on-going dialogue, and minimising unfair decisions. The results of this study pointed to the importance of four interrelated subcomponents, namely participation, fairness, dialogue and engagement methods. As previously discussed (Chapter 2), the concepts of participation and fairness are closely interrelated, as decisions can only be fair if all relevant stakeholders are considered. For this reason, these two subcomponents are analysed together.

Participation and fairness. The current planning process in Tasmania is based on the Tasmanian Resource Management and Planning System. This process allows citizen input at several stages, through the reception of submissions and, if necessary, public hearings (see Chapter 4). Two inquiries (Bruny Bioregion, and Kent Group/Port Davey) followed this process, while previous designations did not.

Most interviewees indicated that their organisation participated in one or more of the MPA designation processes, but they tended to refer more often to the Bruny Bioregion case, which was the last and most contested. The consultation process for Bruny was mostly regarded as inclusive. Some issues, however, limited fair and inclusive participation.

One interviewee mentioned that "emotional" and "non-factual" information was not easily considered by the panel or the Planning Commission, meaning that issues such as place attachment, cultural, spiritual and ethical motivations might have been discounted. Another problem mentioned by some interviewees was that participation started halfway through the process when a background report was released for public consultation. Participation was not sought at the beginning, when information was compiled, problems identified and possible solutions considered. Because key stakeholders were not involved early on, some interviewees indicated that they were more likely to take issue with initial proposals.

> We're not part of the original process, which is probably half the problem with a lot of these things. If you included everybody at the start, you could probably come up with a compromise result, which doesn't start a bonfire later on (Interviewee 13).

On other issues, such as fisheries management, the State Government seeks the advice of some stakeholders informally or through advisory bodies. Decision powers, however, rest solely on

government. As Interviewee 18 suggested, not having decision powers tended to reduce ownership and responsibility of stakeholders in the implementation of decisions:

> We could implement co-management, where industry was sitting at the table as a decision maker, not as a recommender; they would actually have a stake in making the decisions, and then would have to live by and implement the decisions (Interviewee 18).

Another aspect of participation evident in interview statements was that stakeholders were differentially treated by both government representatives and by other stakeholders. In MPA designation processes, commercial and recreational fishers were consulted before inquiries went public, because they were deemed a key stakeholder. On the other hand, other users such as divers and Aboriginal groups were not considered as important, even though they could be directly affected by conservation decisions. Even government bodies in charge of implementation of MPAs, such as PWS and the police, did not participate during the development phase of the background report or other documents. Moreover, according to some interviewees, public servants are not allowed to get involved in political decisions. As Interviewee 11 indicated, practitioners do not plan, they "get planned for", even though their expertise is invaluable for a more grounded planning. PWS in particular, seemed to have had a prominent role in the designation of protected areas in the past, but in the most recent processes, they did not have a leading role: "Parks were just *a* stakeholder; … the process is independent of Parks" (Interviewee 5).

Another issue that relates to participation is the presence or absence of a body that represents each sector's interests. An association or similar body usually has more potential of voicing a sectoral concern and point of view than scattered individuals. If that organisation is recognised by government as a valid representative of the sector, that sector would have a better chance of having their views included in any decision-making process: "…when you are recognised by government, you are more in an ongoing working relationship, rather than being an adversary" (Interviewee 18).

Interviews indicated that the sectors with an interest in Tasmanian MPAs have varying levels of representation through formal bodies. Some are well-structured and highly organised bodies, such as within the commercial fishing sector. Others have conflicting representation, where more than one body claims to represent the sector. Some groups have no representation at all. Even within a sector with a recognised body such as recreational fishers, apparently many people are not represented, because they are not members, do not feel that that body represents their interests, or are not interested in formal membership. Such differences mean that certain

sectors have a better opportunity than others to have their views considered during the consultation process.

A related concern during interviews was that there were some "vocal minorities", or people that spoke up more aggressively and were therefore more likely to be heard. When such vocal minorities do not represent the majority of people in that sector, they can in fact obscure or confuse the interpretation of a sector's position. It was recognised that in Tasmania this can be true both for sectors that oppose and that advocate for MPAs.

> There is a vocal minority with a particular view. You need to put that percentage of people, which generally is less than 5% of the population, in perspective; they are the vocal *minority* (Interviewee 18).

A factor that was believed to have affected and/or misguided participation was the limited understanding of the marine environment, current conservation status of key species and ecosystems, and the costs and benefits of MPAs. Interviewees also noted confusion about opportunities to participate. This was strongly related not only to information available during the process, but to a lack of longer-term strategies that could allow people at all levels to understand the marine environment, potential impacts of different activities and management strategies, and about their own role in shaping decisions and outcomes.

As mentioned above, most interviewees regarded the Bruny Bioregion consultation process as participative, even considering the problems already explained. However, the final step of the process depended on only one person. At the time of the Bruny Bioregion process, the Minister of Primary Industries and Water was responsible for that decision. The Minister was not required to follow the recommendations made by the TPC or the expert panel. As stated by Interviewee 17, "when all the final power rests with the Minister, he does have a lot of power in his hands despite the process leading into it".

The Minister's decision to create 14 Marine Conservation Areas, which were considered by interviewees to provide little or no additional protection to important marine biodiversity features, was mostly viewed negatively. This opinion was shared across the different sectors and was not exclusive to conservation-minded organisations: "Conservation focused people will feel fairly miffed that there were no additional no-take MPAs, understandably so" (Interviewee 12).

According to some interviewees, the Minister's decision was made after strong lobbying by a few individuals from the recreational fishing sector. These individuals supposedly managed to get the support of a large number of recreational fishers who had the mistaken impression that

the TPC proposals would mean they would be locked out of large areas off the Tasman Peninsula.

One of the purposes of engaging the community is to include the views of a range of stakeholders and make better decisions that reflect their needs and expectations (Department of Premier and Cabinet 2013). If the final decision is independent of that input, the consultation process becomes meaningless, turning the whole process into one of token participation. This generates mistrust in government, as reflected by the following statement from Interviewee 18: "When something did happen, nothing *really* happened, that was all just smoke and mirrors".

Interviewees also noted the effect of politics on decisions. On the one hand, the Bruny Bioregion decision was made a few months before the 2010 state elections and the need to get re-elected could have likely guided the Minister's decision. One interviewee blamed the Tasmanian electoral system, where Ministers are politicians who do not necessarily represent the common interest, but follow the preferences of a minority constituency whose support they need to increase their chances of re-election.

Dialogue. In general most organisations recognised that the TPC, and in particular the panel appointed for the Bruny Bioregion process, were objective adjudicators of the various viewpoints put to them. Several interviewees, however, pointed out that the process was too formal and that the official documents were too complex for some key stakeholders to consider.

> A formal planning process is great from a legal perspective, but it's not great from a human perspective. And we are humans, and we live in communities and we don't function as lawyers (Interviewee 16).

By not reaching many relevant people and organisations, there was an opportunity for people to manipulate information. For example, some interviewees mentioned that during the Bruny Bioregion process many recreational fishers were led to believe that a no-take MPA off the Tasman Peninsula was going to be larger than the actual proposal. This misconception was supported by a note released by the ABC at the time of the controversy: "The plan for a marine park for the Bruny Bioregion covers a stretch of water from Marion Bay on the East Coast, including the Tasman, Storm Bay and Bruny Island, down to Southport" (Dakis 2007).

For many fishers this massive MPA would have been unacceptable. According to one interviewee, if they had perceived that the proposal was reasonable, at least some fishers would have considered it, and this might have brought other sector representatives to negotiate outcomes that might have been acceptable to all parties.

> Everybody was worried about the one [MPA] that they were planning doing at Eaglehawk Neck, the Hippolytes and the coastline from Eaglehawk Neck to Tasman Island. They were planning an MPA all along there, with a tremendous impact on everybody. I can't even come to grips at this time that they actually proposed it. … They had to change the rules to their original plan [Bruny original proposal], because their original plan just wasn't acceptable to anybody! Whereas if a few said maybe we should look, the larger group would think about it. They might have had more constructive outcomes (Interviewee 19).

Some interviewees mentioned that fishers and environmentalists both manipulated information to suit their interests. According to these interviewees, some environmentalists overstated the benefits of MPAs while some fishing interests overstated the costs. In the end, many may have had access to partial or manipulated information, and their perception of the MPA process depended on which organisations' information they received.

A problem mentioned by some interviewees is that marine environmental issues are more difficult to understand and explain than their terrestrial counterparts. A high level of uncertainty in scientific evidence might explain varying views within the scientific community. As Interviewee 15 stated, "the actual advice from IMAS varies depending on who you talk to". This in turn, might have hindered a dialogue based on clear evidence. When strong feelings and beliefs, rather than facts, determine the position of stakeholders, then having a rational dialogue and negotiating a balanced decision becomes more difficult.

> It's almost like dealing with a religion. It's a matter of faith, it's got nothing to do with the truth. If someone believes something to that point that they think the scientists are trying to screw them, and these people are all lying, no matter what you say, they're not going to listen to you (Interviewee 14).

Some interviewees further mentioned that there was a perception of two opposing points of view or ideologies regarding MPAs. Although it was an oversimplification of the different positions on MPAs, this divide has been exaggerated in political debates.

> In Tasmania there's this schism between so-called pro-development and pro-conservation. And I think a lot of political forces in Tasmania try and exploit that … I think that has coloured the marine protected area debate. It's got to the point where it's very hard to discuss issues without that discussion being coloured by where you are supposed to sit in the political spectrum (Interviewee 15).

The need of the two major political parties to distance themselves from "green" positions has driven even more extreme positions in politics.

> As soon as the Greens say something, there seems to be a reflex where the other parties don't want to do it … they don't want to take on a constituency that is considered sneaky green stuff (Interviewee 1).

This perceived polarisation, however, seems to be overstated, as most interviewees tended to be, at least in principle, sympathetic to different points of view and other stakeholder's needs and expectations. Most stated that they would be open to discuss different MPA proposals and conservation alternatives.

> My personal opinion is that we should try and get involved with conservation groups more heavily than we are … To my opinion you'd better be with them than against them; several times you might not agree with everything that they are saying, but it's better if they're friends than if they are not. (Interviewee 19)

According to some organisations interviewed, the Kent Group and Port Davey process allowed negotiations and revisions to take place before the final decision. As a result, most participants felt relatively satisfied with the outcomes.

> It would have been nice to have a little bit more protected (in the Kent Group and Port Davey), but they certainly demonstrated that the process could work (Interviewee 15).

In contrast, the Bruny Bioregion process was particularly contested. There were too many conflicting interests concentrated in the bioregion, and limited dialogue exacerbated the difficulty to reach a satisfactory agreement.

Many interviewees stated that there were a number of issues surrounding the general MPA discourse. One key point was the lack of clarity about the intentions of the MPA system. In particular, the term MPA meant different things to different people. On the one hand, some understood the term as a reserved area, or a no-take zone, where all extractive activities were restricted. Others understood the term to be an area that accommodated different uses, including extractive activities. The Tasmanian Marine Protected Areas Strategy has a flexible definition of MPA, which encompasses no-take, limited use and multiple-use areas (Marine and Marine Industries Council 2001). Interviewee 5 considered that a unified approach would have been preferable: "And that, I think, is one of Tasmania's major problems in the designation process: they haven't actually defined what the system is going to look like".

Such a strategy could have sought to establish large multiple-use MPAs with smaller no-take zones, as found in the most recent Western Australia experience (Wilson 2016), or the Great Barrier Reef Marine Park (Day 2016). An alternative strategy could have been to establish a system of relatively small no-take zones or reserves, such as the marine national parks and

marine sanctuaries created in Victoria in 2002 (Wescott 2006, 2016). However, there has never been clarity around which of these strategies, or perhaps a mixed approach, would be adopted for Tasmanian MPAs. As a result, people might have confused perceptions about the intent of a Tasmanian MPA system and associated zoning regulations and restrictions.

> If we actually had a very clear system … there would be some clear facts about what we were trying to achieve. It wouldn't be so open to people's emotive and manipulative approaches (Interviewee 5).

Many interviewees highlighted the role of advisory committees as potentially important deliberation forums. In particular, FACs were considered to allow an on-going dialogue about management issues between stakeholders.

> These sorts of bodies [FACs] are made up of everybody who has an interest within the fishing industry, whether the police, the fishermen, the policy makers. And all these people are consulted and finally, based on all the consultations, that's when DPIPWE will make recommendations to the Minister; after consulting all the relevant parties. I've only been doing this job for a year, but I can't think of a circumstance where the Minister has made a decision that is contrary to common sense … things are put up well in advance and talked about (Interviewee 7).

In these committees, enough time is given to discuss problems and possible management. They collect evidence, identify information gaps, and generate more agreement amongst the members before decisions are finalised. If most committee members agree on a position, the Minister will be faced with a less controversial decision. Therefore, an on-going dialogue can reduce the possibility of a Minister ignoring the input of most participants. This is in contrast to the consultation process adopted in the Bruny Bioregion case.

Engagement methods. In general, participants judged participation to be inclusive and the panel of experts was considered balanced and reasonable. However, many interviewees were of the view that there were issues that affected the participation of relevant stakeholders. For example, many potentially interested parties do not read the public notices or formal communications such as Government gazettes that inform the public of the opportunity to participate in consultation processes. Therefore, some stakeholders heard about the processes after participation opportunities were closed and decisions were finalised. The TPC also relied on the internet to make available key documents. According to one interviewee, not all individuals have easy access to the internet, or they lack the appropriate electronic literacy to download relevant documents and send electronic submissions. Some individuals, even though they have

access to the internet, may not have the capacity or willingness to read and understand long and complex documents and provide well-supported submissions.

Considering the difficultly in communicating information about the marine environment, some interviewees mentioned that there was a lack of a longer-term, more strategic mechanism of conveying such information. Interviewee 11 specifically mentioned that, providing formal school education on marine issues is challenging, as it depends on individual teachers:

> It's pretty much up to the individual high school teachers to look at marine issues. Marine science as such is not a subject, it's always an option. Very few schools have someone enthusiastic enough about the area to run it, because it's quite an energy thing to run! It means you need to be interested and want to do it. It's not something you can, for example if you leave the school, just hand it over to your replacement.

The Taroona High School marine program and Woodbridge Marine Centre were praised for using experiential activities to teach children about marine values and threats, and to learn about the importance of marine science.

The communication of information to the public by the research sector and government agencies is vital for an effective participatory process. A common theme in the interviews was the poor communication of key information held by scientists and government agencies. Some of the organisations interviewed suggested that the private sector could enhance communication exchange with the general public:

> The (consultation) process is fine, but it's just the execution of the process that could be enhanced and improved. And there are opportunities for the government to utilise the non-government sector in trying to elicit that information that are much more cost-effective than public meetings (Interviewee 18)

Some successful outreach and information exchange activities mentioned by interviewees included the DEP's community outreach and involvement program. TARFish was also commended for being present in all major events talking to recreational fishers and trying to understand their points of view. Furthermore, the Secretary of TARFish collects scientific information and invites experts to their board meetings to support their decisions. Such activities have the potential to enhance the government dissemination of information.

5.1.2 Accountability and transparency

A transparent process should make available all information relevant to the decision making process. This information should include who makes the decisions, which decision methods are

used and the information on which decisions are based (Lockwood 2010). Desirable information to explain or support decisions includes arguments for and against the decisions under discussion, the reasons behind the inclusion or exclusion of certain information, and any information gaps or assumptions. In the same vein, there should be bodies or designated officers responsible both for the decisions made, and for their implementation. These responsible bodies or officers are accountable for their actions to their immediate superiors and ministers, and to the public (Parker and Gould 1999). The interviews highlighted issues related to the following subcomponents: information availability; clarity of roles; and responsible bodies.

Information availability. Some interviewees argued that issues of marine conservation were difficult to study. They also remarked that society's relationship with the sea, if any, occurs mostly above the surface. Therefore, most of the dynamics and impacts are invisible and consequently out of mind. This low awareness of anthropogenic impacts on the marine environment is augmented by the sliding baseline syndrome.[8] The limited information that results from the combination of all of the above factors means that many people do not know why closing off areas might support marine biodiversity conservation.

The quality of marine research in Tasmania was widely recognised by interviewees. They believed there were good data about the most representative habitats and species that needed protection. This scientific information was provided in the MPA consultation processes and was available to all stakeholders. The consultation processes allowed the inclusion of additional information provided by stakeholders. The panel in charge of evaluating the Bruny Bioregion case, was considered by interviewees to be independent and balanced: "The panel had a wide range of views on it. It wasn't just conservationists, there was a very wide range of views, and may ask very sensible questions" (Interviewee 14).

Official documents such as Background Reports and Recommendations were based on scientific information and additional information provided by stakeholders during the inquiry. These documents generally provided the reasoning behind proposals and recommendations. One difficulty with the consultation process, however, was the absence of a clear way to deal with stakeholders' values and opinions, as opposed to technical and scientific information: "The Commission prefers evidence-based submissions, not unsubstantiated opinions or emotive comments" (Interviewee 3).

[8] According to this theory (sliding or shifting baselines), people assume that recent conservation status is the baseline, and therefore conservation expectations tend to drop continuously through generations (Pauly 1995).

Some interviewees mentioned that while information was publicly available, some did not hear about the process and the possibility of participating until it had concluded. Official documents of the inquiry were considered long and technical. This meant that those unwilling or unable to read and interpret complex documents, and write well-supported letters to the panel, were not able to participate.

As already mentioned, another issue referred to the lack of clarity of the proposed MPA system. The Tasmanian MPA strategy allowed for a diversity of management objectives and categories, ranging from no-take reserves to multiple-use areas. Some interviewees felt that this approach made the process more ad hoc and increased the confusion over terms such as marine protected area and reserve. This might partly explain the perceived threat behind the MPA language.

During the inquiry, the purpose of each of the proposed areas was also apparently unclear. According to Interviewee 10, the proposed areas were representative, but information about values, threats and corresponding actions was not available for each of them. This interviewee believed that MCAs could have contributed to biodiversity conservation, if a risk analysis had been performed after their designation and restrictions had been established according to threats and values:

> Long before you apply any classification criteria, category I, II, III, IV, V, VI, you need to find out what the threats are, and find out what the classification will do to mitigate those threats. Only then are you in a position to really say to the public, and get the public to believe in it, that a classification is going to produce an outcome, and this is going to be a benefit.

In contrast to the consultation process, several interviewees argued the final decision left many unanswered questions and lacked transparency. The Minister at the time did not accept the recommendations of the TPC, but he offered no explanation as to who advised him or what were the justifications of his decision. Some interviewees believe the decision served particular interests, and were a consequence of vigorous lobbying by these parties.

Some interviewees stated that they did not have clear information as to why assessments of other Tasmanian marine bioregions have not proceeded, as intended under the state strategy.

> There's been no public consultation, and there's been no public announcement of what the State Government is going to do [about the rest of the bioregions], if in fact they're going to do anything (Interviewee 21).

This is further supported by Interviewee 15, who casted doubt upon the actual intention of the previous government:

> With our last Government, we had lots of nice conversations with politicians and bureaucrats and everyone said they liked MPAs. The main barrier was the lack of money … I have to wonder whether it was just an excuse; Tasmania is not the richest place in the world, but money is probably not necessarily such a limiting factor with MPAs.

After the Bruny Bioregion process, no further advances were made in relation to MPAs. Four bioregions are left with no MPA representation and other regions have limited representation. Furthermore, the Bruny Bioregion marine conservation areas do not offer significantly enhanced biodiversity protection when compared to non-protected areas.

Responsible bodies. Some interviewees highlighted the fact that there were several pieces of legislation governing the designation and management of MPAs (NCA, NPRMA, LMRMA and related regulations). These Acts were administered by different agencies. Therefore, more than one agency and more than one Minister had to deal with marine conservation issues. This created problems of coordination, as described below. This was also accompanied by ambiguous responsibilities, where staff did not necessarily know the scope of their responsibility and that of another agency. For example, compliance was mainly the responsibility of the police, but according to one interviewee, some PWS staff are authorised under fisheries legislation to enforce regulations. As not all rangers have enforcement authority or skills, some felt it was not their responsibility to enforce regulations within MPAs. Another interviewee complained that ministers tended to use that lack of clarity about roles to mutually relinquish their responsibility to other ministers. In this way, some issues can remain unanswered by both ministers.

> We have ministerial responsibility divided, so you have a Minister for the Environment, and you have a Minister for Primary Industries, so you need to send the same letter to both of them, and each of them will say my colleague is [dealing with it] (Interviewee 21).

The roles of the TPC and the panel during the consultation process and the steps involved were deemed as clear, especially for those that participated. On the other hand, the final step of the process, where the Minister considered the recommendations of the TPC and the panel, was not clear. Only the Minister was in charge of evaluating the input of all stakeholders and the resulting TPC recommendations. It was not clear if the assessment of the documents was overseen by other members of Parliament or Cabinet, or who advised the Minister. The Minister did not explain to the public why he made a decision different from the final recommendations. Those who felt that the decision had undermined principles of transparency and participation, had no formal avenue to express these concerns.

5.1.3 Legitimacy

Legitimacy of an entity or a process is in part related to legal authority. Other aspects that contribute to legitimacy, include evidence-based decision making, the integrity of decision makers and the extent to which a decision making body is acknowledged by stakeholders to be the appropriate authority (Sanderson 2002; Lockwood 2010).

Authority by law. The Tasmanian MPA Strategy was developed by the Marine and Marine Industries Council in 2001. As mentioned by interviewees, the Strategy was not legally binding, and was only a conceptual guideline for the MPA system. Planning processes, on the other hand, are formalised in the *Public Land (Administration and Forests) Act 1991*, and the inquiries and proclamation processes for the Kent Group - Port Davey/Bathurst Harbour and the Bruny Bioregion followed that process. Interviewees indicated that the Minister did not have to follow the recommendations of the TPC and did not need to explain his decisions.

> The Fisheries Minister of the day has a great deal of power under the legislation, so there's sort of a problem there with the decision making process (Interviewee 15).

So, even if the decision in the Bruny Bioregion case was considered by some interviewees to be contrary to due process and good governance, it was legal. In the same vein, interviewees stated that ministers do not need to follow recommendations made by DPIPWE, PWS or FACs, nor explain why they make different decisions. Most interviewees stated that decisions were "political", implying that while those decisions were not necessarily in the best interest of the community, they believed that the decision process could not be changed. According to interviewee 18, "if you could get politics out of resource management, it would be so much easier, because then all the right decisions would happen". Politics was thus regarded by most interviewees as an unavoidable fault in decision-making. Some of the issues included no traceability; available evidence ignored or dismissed; no explanations to the public; vested interests not disclosed; and the override of formal process. However, the legal process for decision-making gave that power to the Minister. Therefore the outcomes of the Bruny case were formally legitimised, even if they were not accepted by most stakeholders.

Evidence-based decisions. Some interviewees highlighted the uniqueness of Tasmanian marine biodiversity, due to its high levels of endemism and the presence of key habitats. One of the main threats recognised during the interviews was the uncontrolled nature of recreational fisheries. Licences are only required for a few species, and bag limits might be inappropriate when several fishers are in one area over a prolonged period. The growth of this activity and the

associated technological advances are perceived to have enabled fishers to reach remote places and be more efficient in catching fish. This increasing pressure over resources was believed to lack a corresponding control of effort.

> There are no hard numbers on the recreational catch in the state. There's only what you would call guesstimates and in many cases that only applies to the target commercial species. So bycatch is just an unknown factor (Interviewee 14).

The deterioration of the marine environment is most evident for those who have a long-term relationship with Tasmanian waters, especially underwater. As already mentioned, understanding these unique habitats and teasing out the effects of different activities is very difficult. This can result in high levels of uncertainty. Some interviewees suggested that MPAs could provide a baseline of what the ecosystems could look like without some of the most important pressures. This could guide future management strategies. A risk assessment of marine values, specific for each case, could provide clearer guidance as to the best management tools and if no-take MPAs could assist in reaching conservation and socio-economic goals.

> My view is that in the majority of cases, what we are not doing is going to an area and saying that the main threat in this area is X, and the best way to mitigate it is to do Y (Interviewee 10).

Some interviewees stated that scientific evidence to guide decisions can vary substantially. This can depend on the scientist consulted. Politicians can take advantage of this, as they can choose which evidence is more convenient for the kind of decision they want to make. For example, according to Interviewee 21 in the Bruny case "… the Minister said here's someone from the University saying there's no scientific evidence, so therefore we don't need to have no-take areas".

Some interviewees felt that in general, science and practical experience have been devalued, and politicians and high-level bureaucrats do not consult scientists or practitioners to support their decisions.

> My real puzzlement is when people are making decisions politically in an area that they don't know anything about, why they don't follow the advice? There's plenty of information out there. CSIRO and IMAS just have so much; why that isn't valued and considered? (Interviewee 11).

Scientific evidence is often generalised, and some interviewees mentioned that conservation organisations regularly base their campaigns on information that might not be relevant for the specificities of each region. They can also select certain information to make a point, ignoring

conflicting evidence. One interviewee mentioned the case of shark finning.[9] Conservation organisations mobilised people to send out large numbers of letters and emails to politicians all over Australia to raise national concern over this practice. The practice, however, was perceived by this interviewee as a problem in some regions, but not in Tasmania. This interviewee believed that conservationist campaigns forced unnecessary regulations for the State.

As part of the process of consultation with stakeholders, many interviewees believed that management alternatives determined by scientific evidence can be restructured according to stakeholder input, in order to support social-economic objectives and to build support. However, one interviewee mentioned that in many planning processes, final proposals have been altered in unexpected ways, and political interference has been blamed for those changes. Modifications based on politics are usually difficult to track, and according to some organisations, they may seem illogical.

> The Bruny Bioregion was an example of how very good science and good conservation planning process, from my perspective, can get completely and utterly sidelined by politics (Interviewee 25).

Influences and the political position of certain sectors and organisations could have been partly responsible for a seemingly unequal consideration of activities in the Bruny consultation process, which gave certain activities, such as fishing, more prevalence than others, such as diving.

Some interviewees believed that extremist views, both for and against MPAs, were related to irrational arguments. People or organisations with extremist views were inclined to overlook any evidence that contradicted their arguments. While extremists might not have represented the general view of a sector, their advocates tended to be more vocal. Many interviewees believed that the final decision followed the views of extremist recreational fishers, rather than the evidence assembled by the TPC, or even the view of the majority of recreational fishers.

> Your average recreational fisher, mom and dad and their kids, they are logical, rational people, who, when you talk to them about marine protected areas, and what they are actually trying to protect, can understand the rationale (Interviewee 18).

Integrity. Short-term economic interests are perceived to have a priority in politics, even if long-term sustainability is in the interest of the community. Many interviewees stated that the final

[9] Cutting off the shark fins, which fetch a higher price than the meat, and throwing the rest of the animal back.

decision was determined by politics, and politics tended to be characterised by unstated influences and motives.

> A lot of politics in Tasmania goes behind closed doors, so we don't actually know quite a lot of information shared between people who lobby politicians … as we saw in the last round of MPA proposals in the Bruny Bioregion, the politics sort of gazumps everything else … When you talk to politicians, 99% of the politicians, you don't know quite what they are saying (Interviewee 15).

According to Interviewee 14, politicians in Tasmania are perceived to follow their own interests: "It's very rare to come across someone who is there genuinely for the benefit of the people. Most politicians are in it for themselves". Many times their immediate interest is gaining enough votes to stay in power.

> In the Bruny Bioregion decision it was really clear that the Minister thought there was enough anger in the community to lead to several thousand votes being lost; and that would be sufficient in Tasmania to change, probably not the Government, but certainly change the make-up of who was actually in Parliament (Interviewee 25).

Immediately after the Final Recommendations were delivered to the Minister, he sent a letter to licence holders, reassuring that the State Government would not create any MPA that banned recreational fishing (Neales, 2008). This letter suggests that the Minister believed that the majority of recreational fishers shared the strong opposition of the vocal fishers who dominated the public debate. His decision could have been thus motivated by an interest in keeping voters happy.

The process of establishing a comprehensive, adequate and representative MPA system for Tasmania was supported by several scientists and conservation organisations. Some interviewees stated that the Tasmanian interest in MPAs was derived from the push of the Australian Government to fulfil an international commitment to protect 10% of marine and coastal areas by 2012.[10] The focus of the State Government was perceived to be on the number of hectares protected, rather than an interest in biodiversity conservation. This focus on designation was backed by other interview statements, which suggested that MCAs were no more than "paper parks". There was a feeling that the State Government did not provide a proper budget for the management of new protected areas when inquiries started.

[10] Decision VII/28 of the CBD meeting in 2004 stated: "[The Conference of the Parties] adopts the programme of work on protected areas … with the objective of the establishment and maintenance by 2010 for terrestrial and by 2012 for marine areas of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas …"

> If Liberal or Labor institute a marine park, it's probably because the Australian Government gave them some money to do it a number of years ago, and they're not doing it yet. The money was just to implement them ... I don't think anybody thought they were going to manage them (Interviewee 13).

The current Liberal Government has openly stated their opposition to MPAs, having imposed a moratorium on any new areas: "More than 135,000 hectares of Tasmania's coastal waters are within Marine Protected Areas, equating to nearly eight per cent of coastal water. A majority Hodgman Liberal Government will impose a moratorium on any new Marine Protected Areas in the State's waters" (Tasmanian Liberals 2014).

The impression that Tasmania was following a national agenda driven by international commitments, rather than having any real political will to protect the marine environment, is reflected in the low priority of current MPAs. This lack of interest is also reflected in the absence of political leadership needed for forwarding unpopular decisions to ensure the sustainability of marine resources. This is supported by Interviewee 18: "If you don't want to lose votes, you don't make too many courageous decisions, because in Tasmania that means losing too many votes." Specific examples mentioned by some interviewees included the lack of final decisions on establishing licences to fish endangered species, like Bluefin tuna, or the banning of graball nets. Such examples of failed commitments to act in good faith to progress marine conservation processes compromise legitimacy.

Another issue raised that related to integrity was that sources of research funding are not always openly disclosed. Some interviewees believe that the results of research projects and related positions on MPAs might be influenced by expectations of funding bodies. Such bias was suggested to occur in research projects that provided arguments against MPAs, when part of the funding for these projects came from the fishing sector. Likewise, projects funded by conservation organisations were perceived to be more likely to support the establishment of MPAs.

Stakeholder support. Some of the previous issues related to legitimacy contributed to reduce stakeholder support. This was particularly evident for the Bruny Bioregion case. The lack of clarity about roles and procedures, the purpose of MPAs, the lack of a system and the limited information about the marine environment and its threats made it harder to secure stakeholder support. In the Bruny Bioregion case the consultation as a process was well supported by most interviewees. However, as preliminary decisions were made before consulting stakeholders, some interviewees believed that this might have generated some direct opposition that could

have been avoided if participation had started from the beginning. In relation to the final decision taken by the Minister, many interviewees believed that it generated confusion, resentment, anger and frustration. It left the impression among participants of having been deceived, which reduced trust in government and diminished willingness to participate in future processes.

> I participated in the Bruny Bioregion marine parks fiasco … I'm personally very reluctant to get involved again because I can't see, unless they change a lot of things, it being any improvement (Interviewee 14).

Even some organisations that did not fully support MPAs were puzzled by the final decision.

5.1.4 Performance

The concept of performance is closely related to management, but some subcomponents are relevant to governance as well. The subcomponents contributing to performance include: direction, appropriate skills and resources, coordination, and efficiency and effectiveness. Direction refers to appropriate guiding policy instruments that set a clear path and envision a feasible future. Organisations involved in MPA governance and management need appropriate skills and resources to perform their tasks, including community involvement practices. Coordination across sectors is closely related to efficiency and effectiveness. Particularly in Tasmania, where legislation governing marine conservation issues is divided (Kriwoken 2016), coordination becomes a major challenge.

Direction. In Tasmania, the only guiding tool is the Tasmanian MPA Strategy, which is not enforceable. Because the Strategy was completed in 2001, some interviewees believed an update would be appropriate. Although the Strategy was perceived to be a good guiding tool, many interviewees highlighted the lack of a real commitment by the Tasmanian Government. This was evident in a fragmented legal framework, an inadequate budget, and limited actions to effectively manage existing MPAs. Some interviewees pointed to the salience of other ongoing environmental controversies, such as forestry, which have reduced the capacity and willingness of several organisations and politicians to engage in yet another environmental conflict.

> I don't think he [the Minister] was against it [MPAs], but also the forest process was happening at the same time, so it's a lot of other intense noise going on in the conservation-resource management space. I guess they could only deal with so many issues at once (Interviewee 16).

Many mentioned that the region by region approach to designating MPAs was inefficient and it failed to address the big picture. One interviewee suggested a state-wide process could have presented each proposed area as part of a larger process, in which people in other regions were making compromises as well. Another interviewee stressed that starting with the most complex bioregion was a mistake, and that it should have been left last, when the process had been tested and refined in less controversial areas.

Politicians in Tasmania are perceived to have short-term economic priorities, while long-term sustainability is secondary. There is no political leadership to drive MPAs or other marine conservation tools onto the policy agenda.

> The process has come to a grinding halt because the government is not prepared to put any money into doing the work of risk assessment, talk about what the threats are, work out how best to classify the areas; there's no will to do anything (Interviewee 10).

Engagement methods used during the Kent Group/Port Davey and Bruny Bioregion inquiries followed prescribed steps in the *Public Land (Administration and Forests) Act 1991*. As mentioned above, many key stakeholders did not participate, either because they did not hear about the process, or because participation required commitment and particular skills. Guiding tools and the legal framework did not provide for tailored engagement methods that could facilitate more meaningful participation. The MPA Strategy highlighted the importance of education and consultation, suggesting the development of "an education and community awareness program" (Marine and Marine Industries Council 2001 pg 20). Such a program before and during the inquiry could have built more public understanding and assisted a more informed public debate, but it was not implemented.

Appropriate skills and resources. The lack of political will to advance marine conservation is perceived to be reflected in the inadequate MPA budget and limited operational planning. Most interviewees showed concern that only one person was dedicated to the management of all MPAs in Tasmania.[11] Only Maria Island Marine Reserve and Macquarie Island Nature Reserve have management plans. The Tasmanian Wilderness World Heritage Area Management Plan, which includes Port Davey Marine Reserve, was pending approval in late 2015. As discussed by the interviewees, PWS did not have a surveillance strategy for the marine areas they manage, and relied on the marine police to enforce regulations. There were no research or monitoring plans. Monitoring of some of the MPAs was delegated to IMAS, so it was perceived to be guided more by research interests than by management needs.

[11] Soon after the interviews, the Marine Reserves Officer position was discontinued.

Coordination. Poor coordination was perceived to start at the national level, with no alignment between aims and strategies across sectors, nor across levels, between the Federal and the Tasmanian Governments.

> One of the problems that we see is that the left hand doesn't know what the right hand is doing. The State Government will be doing one thing and the Australian Government will be doing something completely different (Interviewee 18).

While the Australian Government is responsible for international commitments such as the designation of protected areas in 10% of its waters, each state does not necessarily have the same priorities. According to a few interviewees, the Australian Government funded the development of a Tasmanian MPA system, but this ended with the Bruny Bioregion inquiry. Some bioregions were left with inadequate or no representation in an MPA system. As mentioned by Interviewee 1, the topic has not had much political coverage, possibly because other issues such as forestry have dominated the environmental debate: "I actually think MPAs in Tasmania have paid a price for the forests conflict and debate and politics".

Many interviewees believed poor coordination between PWS and the Marine Resources Group was a consequence of the agencies working under two different Acts. The priorities and objectives of the agencies were perceived to be fundamentally different.[12] According to one interviewee, PWS did not have the authority to develop MPA management plans independently. To develop management plans, PWS would need to align priorities with the Marine Resources Group and have the endorsement of relevant Ministers. Additionally, regulatory compliance within MPAs required coordination with the police. The perception was that that coordination could be much stronger and strategic. Some interviewees believed that these agencies should have a joint plan to address enforcement actions, monitoring of compliance and to clarify the role of each agency's officers.

Biological monitoring is one activity that might have increased coordination between different government agencies, and between government and non-government organisations. For example, PWS and Birdlife Tasmania have worked together to monitor seabirds in coastal areas, and IMAS has monitored reefs in marine reserves. Woodbridge Marine Centre has worked with PWS to use marine reserves to teach children the importance of marine science. Probably the

[12] The Marine Resources Group "supports the orderly and sustainable development of Tasmania's marine farming industry", helping to "grow Tasmania's primary industries". PWS on the other hand, "aims to protect, promote and manage Tasmania's world-renowned parks and reserve system, … [which] provide significant environmental, social, cultural and economic benefits" (Department of Primary Industries Parks Water and Environment 2014).

best regarded example of constructive collaboration between government, industry, community and science was the DEP. This program has coordinated monitoring efforts, and engaged the industry and the community in the conservation of the Derwent estuary. Some interviewees suggested that some of these existing links had the potential to bring together organisations with different interests and various skills, to find commonalities and work towards shared goals. To realise this potential, however, a specific coordination strategy would need to be developed.

Efficiency and effectiveness. As pointed out by one interviewee, the government can be very efficient when making decisions that concern human health, but environmental issues were perceived to be of low priority. One interviewee feared that the current interest of governments in increased efficiency in licencing could reduce control over environmental impacts.

The planning process in Tasmania was regarded by some interviewees as generally effective and relatively efficient. Many times planning processes have resulted in satisfying outcomes reflecting a balance of interests, as in the case of the Kent Group/Port Davey inquiry. The Bruny Bioregion inquiry, however, showed that there are faults in the process, which prevented reaching the expected outcomes. The proclaimed MCAs did not have significant restrictions to differentiate them from the rest of TSW, and with no zoning scheme or management plans, they were seen as "paper parks". No further steps were taken after the Bruny Bioregion decision, either to manage the new areas, nor to the declare areas for other bioregions. Some interviewees thus considered that the current system of MPAs in Tasmania was too small to achieve the expected outcome of contributing to the conservation of biological diversity.

Another point raised by several interviewees was the inefficiency of approaching the MPA designation process in a piecemeal fashion.

> Instead of doing them all at once and be done with it, it's got to be one by one, and you got to go through the process over and over. Otherwise it would have been done 20 years ago and we wouldn't be talking about it today (Interviewee 13).

The consultation processes were long and costly, but a few interviewees suggested that being long is not necessarily a problem. Including stakeholder input from the start and having an on-going dialogue take a long time. Each process is different, but taking enough time to make a decision might result in more widely accepted outcomes. In the long run, this acceptance is key to fulfilling the ultimate conservation goal. In the case of the Bruny Bioregion, however, the Minister disregarded the recommendations that resulted from the process, wasting state money and the time of government staff, appointed panel and participants. It not only left the

impression among participants of having been deceived, but it was seen as a waste of everybody's efforts and a misuse of public resources.

> A waste of *months* of work, waste of a lot of time and effort by everybody concerned. I know the people who were on the panel were pretty disgusted that the fact of all of their work, all their effort, was basically thrown out of the window (Interviewee 14).

On a different note, some organisations have played a role in supporting government agencies communications and public engagement in the management of marine resources. This has been greatly enhanced by the large number of volunteers willing to support some of those activities. Government agencies, however, have not harnessed that potential in a coordinated fashion, and some interviewees believe private-public partnerships could do better, thereby increasing both efficiency of effort and achievement of outcomes.

5.2 Discussion

In this section, I will focus on the governance issues highlighted by interviewees for the Bruny Bioregion case. As there was a general perception that this was a failed process, it is instructive to consider the extent to which such problems are systematic in Tasmanian marine planning processes. A comparison with examples in the literature provides an overview of the extent to which these problems are found elsewhere. Starting with the TMPAS, and then the steps outlined by the *Public Land (Administration and Forests) Act 1991* (Figure 4.2), I will consider the main points raised by interviewees. I will analyse the interactions between the issues and the implications for good-practice. Associated recommendations will be outlined in Chapter 8.

The history of the *Inquiry into the establishment of marine protected areas within the Bruny Bioregion* (hereafter referred to as the Bruny Inquiry) and the steps undertaken in the process are described in Chapter 4. For the purpose of this discussion, I will collapse the steps into three: a) drivers of the process and guiding tools, b) consultation process and c) final decision. The consultation step includes the referral to the TPC; development of the Background Report; an Interim Report; Draft Recommendations; Final Recommendations; and corresponding reception of submissions from the public and hearings (details outlined in Chapter 4). While this step was probably the most complex, interviewees mostly made reference to the consultation process in general, or specific tools, but not explicitly to each sub-step. Thus, for analysis purposes, I will hereafter refer to the overall consultation process. In concluding remarks, I

summarise the well-regarded elements of the governance regime, the flaws and the aspects that could be improved. I compare the Tasmanian case with examples of good practice from different regions around the world.

5.2.1 Drivers of the process and guiding tools

From the late 19th Century, the main stimulus behind the designation of protected areas around the world was to preserve iconic landscapes and species. After the mid-1900s, tourism started to become a key activity in many of them, but it was only from 1970s onwards that protected areas were seen as a valuable management tool to protect the dwindling habitats and species (Watson *et al.* 2014). It is with this purpose that the TMPAS intended to guide the establishment of a system of effective MPAs in Tasmania: "to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Tasmania's biological diversity" (Marine and Marine Industries Council 2001 pg. 6). IUCN's conceptual developments and definitions (Dudley 2008; Day *et al.* 2012) provided direction, increasing coherence across the international, national and the Tasmanian State levels.

The designation of representative MPAs, however, is only the initial step in the establishment of an effective MPA system. Long-term management, monitoring and periodic assessment of effectiveness are key components (Worboys *et al.* 2015) to achieve primary and secondary goals outlined in the Strategy. As mentioned by some interviewees, at the start of the formal designation process, the government at the time did not envision actions beyond MPA proclamations. For example, MPA managers have lacked adequate funding to perform basic management actions such as effectiveness monitoring, surveillance and community engagement. Most MPAs do not even have management plans; management plans are basic tools that guide management actions, and may include an analysis of values, threats, regulations and financial mechanisms (Worboys *et al.* 2015). Management actions beyond designation were not planned for when the government decided to initiate the establishment of new MPAs, but at the time of designation, the TPC recommended their development (Marine and Marine Industries Council 2001). As suggested by some interviewees, this insufficient emphasis on management might be a result of national and international commitments to achieve a percentage of protected waters, rather than a genuine commitment to the conservation of marine biodiversity (Barnes 2015). One interviewee pointed out that in some cases the establishment of a global numerical target has shifted politics away from real conservation.

Furthermore, Agardy *et al.* (2003) emphasize that vulnerable ecosystems need much higher levels of protection than a universal target set at 10%, 20% or 30%. These authors also stress that policies that focus solely on protecting a numerical target, may divert resources from surrounding waters, where complementary actions might be needed to reach conservation goals. De Santo (2013) argues that a numerical target has driven countries to create MPAs without a corresponding management capacity, undermining both sustainability and social justice. Until 2009, Tasmania focused mainly on proclamation, without clear direction on the next steps to ensure that those new areas were effectively managed. After the Bruny Inquiry, there have been no new designations and very little has been achieved regarding management of existing MPAs. Until 2007, the Australian Government actively coordinated the establishment of a NRSMPA, with the participation of all states and territories. Most efforts afterwards focused on the Commonwealth MPA system, as reflected by limited references to other MPAs in their webpage (Department of the Environment n.d.-a). The latest country report to the CBD highlights that Australia has the largest representative MPA network in the world, but fails to recognise that several marine regions still lack any kind of representation, or that many MPAs have no management plans and their status of conservation is unknown (Department of the Environment 2014a). The lack of government support for MPAs in Tasmania is driven by a combination of factors:

1) The strong divide between pro-development and environmental ideologies in Tasmania

As mentioned by some interviewees, the pro-development – conservation divide seems to be more perceived than real, as it has been exaggerated by the media and by political manipulation. For instance, (Gale 2008) mentioned that branding development opposition as "greeny" has been used to generate political support from businesses in Tasmania. This difference between perceived and actual disagreements has been reported in other places. For example, in a case study from Lake Ontario, Schusler *et al.* (2003) mention that after a collaborative management process, people were surprised to learn that there was much more common ground between different stakeholders than they originally thought. In Tasmania, the dichotomy between development and conservation has probably been fuelled by previous environmental controversies, such as the Gordon-Franklin Dam, the Gunns pulp mill, and the forestry debate (Baidya 1984; Jacobs 2007; Gale 2008; Krien 2010).

2) Uncertain, insufficient and conflicting evidence surrounding the costs and benefits of MPAs

The academic literature demonstrates that MPA benefits depend on a number of factors, such as clear and viable objectives (Weible 2008) and appropriate monitoring; effectiveness of fisheries management and coordination between conservation and fisheries management (Hilborn *et al.* 2004); ecological design (Kirkman 2013); and effective compliance of rules (Edgar *et al.* 2014). As some interviewees mentioned, MPA benefits have been exaggerated, particularly under the steady growth of ecological and socio-economic expectations of what MPAs are supposed to deliver (Watson *et al.* 2014). Failure to meet such complex set of expectations results in loss of faith and bad publicity for MPAs (Pressey 2013). Some have also raised doubts as to the adequacy of MPAs to regulate external threats to biodiversity, like climate change, pollution and invasive species (Kearney *et al.* 2012).

3) Cultural perception of recreational fishing as a right, rather than a privilege with corresponding responsibilities

The perception of recreational fishing as a given right was further commented by another interviewee, who stated that no subsistence fisheries exist in Tasmania, and that recreational fishing should be subject to regulations as strict as those for commercial fishing. Recreational fishers comprise a significant proportion of the Tasmanian population (Lyle *et al.* 2014b). As in other places around Australia, decisions that may affect recreational fishers are delayed or entirely avoided (McPhee *et al.* 2002). Unfortunately, it is unclear if the recreational fishers that oppose MPAs in Tasmania are the majority or just a vocal minority. In other places in Australia, recreational fishers have come to support MPAs after initial opposition (Hoisington 2013).

Regarding the legal tools that support the establishment of an MPA system, interviewees referred to the TMPAS, and to the legal framework under which MPAs are designated and managed. The TMPAS was in general regarded as an appropriate guiding tool, although they mentioned that it probably required updating. Some interviewees also mentioned that the legal framework for designating and managing MPAs is confusing. A set of laws, under the responsibility of different agencies and ministers requires a high level of coordination, which was deemed as insufficient. These difficulties were raised by the TPC during MPA inquiries (Resources Planning and Development Commission 2003a; 2008), and have been discussed in more detail by Kriwoken and Haward (1991) and Kriwoken (2016). Interviewees, however, did not elaborate on the fact that a strategy is usually no more than a guiding tool, and has no statutory weight. Interviewees did not have specific recommendations to improve the legal framework, but in 2008 the TPC made a specific recommendation to amend relevant Acts

(NCA, LMRMA and NPRM) to provide for more effective management by a single authority – PWS (Resources Planning and Development Commission 2008). Other states in Australia have shown a stronger commitment by creating a state-wide MPA system (Wescott 2006; Thomas and Hughes 2016; Wescott 2016). In the case of South Australia, a law specific for MPAs reduced ambiguities in objectives and responsibilities of government agencies (Department of Environment Water and Natural Resources 2014). New South Wales also developed specific legislation to establish and manage MPAs in 1997, although recent governments have introduced changes and weaken levels of protection (Clarke 2016).

The issues considered in this section point to failures in governance performance. On the one hand, direction to establish a MPA system seems to come mainly from international commitments, rather than a genuine interest in protecting marine biodiversity. Remarks from interviewees from different sectors in relation to a lack of political will and weak leadership further cast doubts on appropriate MPA direction. The TMPAS gives reasonable direction to establish an effective MPA system. Nevertheless, without genuine government commitment to implement the strategy, such a guiding tool is insufficient for achieving substantive outcomes. A lack of political commitment is also closely related to insufficient funding to effectively manage MPAs.

5.2.2 Consultation

As detailed in the Section 5.1, most interviewees were satisfied that the consultation process followed many of the components and subcomponents of good governance. The TPC was perceived as an objective arbitrator of stakeholder inputs. The Panel and reference body appointed by the TPC played a key role in considering the available evidence and the views of different stakeholders, managing to adjust the initial proposal to accommodate various interests. There were three documents released for public comment (June 2006: Background Report; March 2007: Interim Report; August 2007: Draft Final Recommendations); participants were invited to hearings in September 2006, November 2006 and November 2007. Throughout the process, the Commission also consulted specific agencies and individuals to further inform itself (Resources Planning and Development Commission 2008). Most participants thought that this procedure was open to those with an interest, making it both participatory and fair. Consultation was also deemed as transparent by most participants, because information about the process, its justification and the role of different agencies was in general available. The information that supported the proposed marine protected areas was mainly considered scientifically sound and

capable of supporting an evidence-based decision, which would give more legitimacy to final decisions.

Nevertheless, in cases with high levels of controversy and several antagonistic stakeholders, such as the Bruny Bioregion, the formal consultation process outlined in Chapter 4 and Figure 4.2 are likely to be insufficient to meet all principles of good governance. Some interviewees raised a number of concerns regarding good governance criteria that deemed the process inadequate for the complexity of the Bruny case. This is further emphasised by submissions received during the inquiry, which suggested that a "flawed process was followed, including a failure by the Commission to adequately consult on the establishment of MPAs" (Resources Planning and Development Commission 2008, pg 20). The response to that concern simply enumerated the steps taken, stressing that it was the process dictated by law (*Public Land (Administration and Forests) Act 1991*). This answer suggests that the Commission was locked into a fixed consultation path. In the literature, the need to adapt methods and tools to specific circumstances is a requirement for proper public engagement (Reed 2008). The rigidity of the TPC processes is consistent with findings of insufficient adaptive capacity in the governance and management of marine biodiversity reported by Lockwood *et al.* (2013).

In the Bruny consultation process, the TPC gathered data from a wide range of stakeholders, writing documents supported with good basic information. Nevertheless, according to some interviewees, some stakeholders never realised that a consultation was in progress, did not have the time or the capacity to read long and complex documents, or did not know that they could be affected by the outcomes. One interviewee suggested that official meetings were not necessarily the best approach to engage large numbers of people, and that non-government organisations could have enhanced communication and participation.

An important point about the Bruny consultation was the limited options given to different stakeholders to engage in a constructive dialogue. The Commission considered different points of view, expressed in hearings and submissions. The process was best characterised as a gathering of information (IAP2 2007), which was then internally discussed to develop the next document in the process. Stakeholders therefore, had limited opportunity to deliberate and engage in a social learning process.[13] As indicated by many of the supposedly anti-MPA interviewees, there would have been room for negotiations, if they had perceived that there was room for negotiating MPAs proposals.

[13] Social learning is described as a collective reflection that take place when people with different interests work together to improve human interactions towards a common goal (Keen *et al.* 2005).

Some organisations even claimed to have had a proactive role in the past, proposing MPAs that could minimise socio-economic impacts. Such proposals unfortunately were not considered seriously, and were never used as the base for a rational discussion about the ideal location, size and regulations of MPAs in Tasmania. A deliberative process might be time consuming and costly, but if this reduces strong opposition and conflict, in the long run it might be more cost-effective. For example, (Hartz-Karp 2007) found that a Citizens Jury arrived at the same solution originally proposed by the Council for a highway exit in West Australia; the Jury, however, managed to solve an unsettled conflict of years between two communities and the Council. Despite the extra cost and time that a participatory approach takes, outcomes can be more sustainable. A prolonged period of deliberation and associated costs need to be planned for, as an unfinished process might result in frustration, mistrust, reinforced conflict and "mistaken learning"[14] (Schusler *et al.* 2003; Muro and Jeffrey 2008; García *et al.* 2014).

Another key issue raised during the interviews was that consultation did not start from the beginning, but only after an initial background report was released. Some interviewees felt that such approach triggers instant opposition and reduces ownership of the process. The need to involve stakeholders at an early stage has been recommended by several authors in a variety of situations (e.g., Reed 2008; Weible 2008; Conrad *et al.* 2011). As an example, in a small community on the Colombian Pacific coast, stakeholders were involved from the beginning, when they were consulted over their willingness to develop management plans for their mangrove areas. Afro-descendant communities in Colombia have struggled to have their rights recognised. Therefore, they are usually sceptic of external aid. An early involvement in the process allowed them to build ownership of the process. It also generated the necessary trust to use the scientific knowledge base to complement their local knowledge (García *et al.* 2014).

To summarise, the main shortcomings were engagement methods that were not tailored to reach some of the key stakeholders, and limited dialogue opportunities between stakeholders. Engagement methods are closely related to information available, because even if the information is appropriate, it might not reach all key stakeholders. This issue is further related to participation and fairness, because if some stakeholders do not have access to information, they might not be in an equal position to have their views considered.

[14] When a group develops a shared understanding that is based on wrong or biased information.

5.2.3 Final decision

In 2009, the Minister for Primary Industries and Water signed the proclamation of 14 MCAs and the extension of two existing marine reserves in the Bruny Bioregion. The decision, however, took most people by surprise, as it did not follow the recommendations of the TPC. MCAs did not have any regulation significantly different from the surrounding waters, and since then the government has not developed management plans for any of them. These areas are therefore still seen as "paper parks" – reserves that exist in name only.

Before making the final decision, several interviewees believed that the Minister was approached by a very vocal group of recreational fishers, and his decision possibly reflected what was discussed in that meeting. The Tasmanian polity is relatively small, which facilitates the informal network of influences, and as one interviewee expressed:

> You use everything at your disposal to use; and getting someone else to manipulate someone, that's fine, you use that. And you've got to lobby, very hard, to get influence (Interviewee 13).

While lobbying is a legal and efficient way of influencing decisions, one of the problems is that it usually lacks official records, and decisions lose transparency. Many times, it is also unfair, as different stakeholders have different lobby capacities. Actors that are more powerful tend to have better means to lobby, while the opinion of marginalised groups is neglected (Lowery 2007). Lobbying also hampers any deliberative process, because the views of lobby groups are more prominent; particularly if participation opportunities are as limited as in the Bruny case.

The Minister sent a letter to all recreational fishing licence holders in Tasmania, assuring that his decision would not affect recreational fishers in any way (Neales 2008). This letter suggests that he believed that most recreational fishers were against MPAs, and that he valued their opinion above recommendations from the TPC and all consultation participants. Some interviewees questioned the integrity of the Minister for making a decision that seemed to be guided by his interest to get enough support for the coming elections, rather than based on the general interest. Some interviewees therefore believed that the decision process was flawed in the final decision step:

> Now the way it should work is the Minister should accept those recommendations unless he's got very strong reasons for not doing that, and he should explain. He's got to come up with bloody good reasons as to why he shouldn't accept recommendations that have been made over such a long and involved process. That situation makes a farce of the entire democratic process (Interviewee 14).

The process to develop the final recommendations that the TPC sent to the Minister took over two years and involved the establishment of a panel and an advisory body with 12 experts, the analysis of 257 submissions, three hearings and the writing of 4 official documents. The fact that the results of the consultation process were mostly ignored, means that time, funds and effort were wasted along the way. People who participated in the process felt that the participatory process was token.

One of the consequences of following a token participatory process is that stakeholders lose trust in government, because they feel they have been misled (Arnstein 1969). Most engagement processes are long and tedious for facilitators and for participants. Considering that the public might make contributions that substantially improve proposals, disrespecting participants in one process, might reduce the potential community support and commitment in the future. Schusler *et al.* (2003) points out that raising participants expectations can disempower communities if those expectations are not met. Non-participatory decisions have the advantage of being faster and less costly (Muro and Jeffrey 2008), so a token participatory process can have as many or more negative impacts on democratic processes.

Considering the different points discussed in this section, the final decision in the Bruny case breached several principles of good governance. It lacked inclusiveness and fairness, as it ignored the input of the different stakeholders and echoed a biased view of the issue. It did not provide for dialogue amongst stakeholders. It was not transparent, as the reasons and influences behind decisions and the process were not disclosed. The decision did not have the support of the majority of stakeholders. The consultation process was time-consuming and expensive, yet its outcomes were set aside in the final decision. Finally, the outcome was inconsistent with the policy of the government at that time.[15]

5.3 Chapter summary

The previous sections in this chapter highlighted and discussed the main problems found in relation to MPA designation processes meeting good governance principles. Table 5.2 provides a general summary of these findings and examples of good practice elsewhere.

[15] "Labor will support the development of a balanced strategy that includes the Tasmanian Marine Protected Areas Strategy whilst providing fair and equitable access to all those with interests in fish and fishing" (Labor 2014).

Table 5.2 Good governance criteria compared between the Bruny Bioregion, other processes in Tasmania and examples of good practice

Good governance criteria	Bruny bioregion	Davey and Twofold Shelf bioregions	Good practice examples
Inclusiveness and fairness	**Good**: Consultation process open. TPC and appointed panel impartial. **Could be better**: Engagement methods, dialogue opportunities and early engagement of stakeholders. **Bad**: Final decision disregarded input from participants and compromises that resulted from (limited) dialogue.	**Good**: Consultation process open. Apparently engagement methods were satisfactory. Concerns from stakeholders considered - final decision was a compromise. **Could be better**: Ongoing dialogue and engaging stakeholders from the beginning. Consideration of pro-active participation of key stakeholders. A more salient role of non-government actors in decision-making. Some sectors could have better formal representation. Communication strategies. **Bad**: Practitioners do not have a key role in planning processes. Easy lobby opportunities provide the chance to small vocal groups to override a sector's position.	In Lake Ontario, a "search conference" provided an adequate forum for different stakeholders to discuss their concerns and management options. This engagement method allowed the participation of all key stakeholders. An open dialogue resulted in "social learning". The authors explain why such methods need to be ongoing, rather than specific in time (Schusler *et al.* 2003). In an innovative process involving a variety of participatory tools, "Dialogue with the City" sought citizen input from the beginning: understanding values and concerns, evaluating planning scenarios and creating a "Community Plan". As a result, there was a high level of ownership and support (Hartz-Karp 2007).
Accountability and transparency	**Good**: Consultation process transparent. Information available to the public. **Could be better**: Clearer legal framework and roles. Easier access to information. **Bad**: Reasons behind final decision and parts involved were not public. Nobody was accountable for unsatisfactory outcomes and these could not be challenged.	**Good**: Consultation process transparent. Information available to the public. **Could be better**: Clearer legal framework and roles. Easier access to information. **Bad**: Nobody is accountable for lack of action or unsatisfactory outcomes (e.g. few management plans; zoning of Maria Island MP). No clear legal challenge.	Galera-San Francisco Marine Reserve in Ecuador established an unprecedented governance system in this country. For the first time, local fishers were part of a management committee that has decision power, rather than an advisory role. The result is that decisions come as no surprise. This process is supported by a conservation agreement, in which local actors are accountable to donors and government authorities for conservation outcomes, while donors and authorities are accountable for financial and technical support. This arrangement is particularly suitable in a

			country with low top-down enforcement capacity (López *et al.* 2012; Zurita and Luna n.d.) . In June 2015, a Dutch court set a landmark for citizen legal action against government inaction in relation to climate change. While the implications of such ruling are still to be analysed, this is an example of how citizens have demanded conservation actions from governments (Enserink 2015).
Legitimacy	**Good**: Government role as single decision-maker generally unchallenged. Good quality of bio-physical information used in the process. **Could be better**: Socio-economic information. More salience of stakeholder contributions. **Bad**: Evidence behind final decision unstated. Low community support for final decision.	**Good**: Government role as single decision-maker generally unchallenged. Good quality of bio-physical information used in the process. **Could be better**: Socio-economic information. Support from some sectors and stakeholders.	Hartz-Karp (2007) explains how a "Citizen's Jury" solved what seemed an intractable problem. The final solution was very similar to the original proposal that had raised strong opposition. Citizen participation, however, increased acceptance by the affected communities.
Performance	**Good**: TMPAS generally accepted. **Could be better**: MPA strategic planning should go beyond designation. **Bad**: Low commitment of government to implement MPAs beyond rhetoric. MCAs have no management plans and are not implemented. Waste of time and resources running a participatory process if not considered in final decision.	**Good**: TMPAS generally accepted. **Could be better**: MPA strategic planning beyond designation (budget and staff for implementation). Development and implementation of management plans. **Bad**: Decisions are highly influenced by political interests; short-term thinking of political leaders.	*The National Marine Sanctuaries Act* (US) provides a robust legal framework for the designation and management of MPAs. Strategic direction goes beyond designation, establishing an agency with appropriate skills and resources, establishing ongoing forums for stakeholder participation and an adaptive management framework (Morin 2001; Etheridge *et al.* 2010).

Although the Tasmanian planning system seems to follow most good governance criteria, there are some deficiencies that can result in unexpected and unsound decisions. These deficiencies will not necessarily result in pro-development, anti-conservation decisions, but affect the overall credibility of the planning system. However, because contemporary political decisions tend to be driven by short-term economic interests (Armitage *et al.* 2007), it is more probable that outcomes will support development agendas at the expense of conservation outcomes. In the following Chapter, I analyse power structures in the MPA governance regime. I explore both the negative aspects of power and the potential role of social structures for collaborative approaches to marine conservation.

Chapter 6 Power structures in the Tasmanian MPA governance regime

6.1 Introduction

In this chapter, I will analyse the power structures and their implications in the Tasmanian MPA governance system. Understanding the underlying power structures will: (i) shed light on how the positive and negative aspects of these structures affect governance quality, and (ii) assist in the identification of opportunities for improvement. Although some authors differentiate between power and influence (Lukes 2005), throughout this Chapter I will use the terms interchangeably to mean the capacity of an actor to affect the actions of others in an intentional way (Wrong 1979).

Exercise of power is often seen as a destabilising phenomenon, which increases inequality and unfairness in decision processes (see Chapter 4). Here I posit that while the distribution of power can have a negative effect on governance quality, many key aspects of good governance depend on some actors having relatively more power than others. For example, positive leadership, coordination and brokerage have been highlighted as key elements to foster good governance of common-pool resources (see Chapter 4 for a discussion). Such elements, however, can be positive only if influential actors choose to exercise their power in ways that foster common goals, consensus building and collaboration. Power can therefore have positive and negative effects, and the outcomes of exerting influence depend on the goals and means chosen by the powerful.

In this study, I used a mixed-method approach, including quantitative SNA, a questionnaire answered by key informants and qualitative information from semi-structured interviews, to investigate power relationships in Tasmanian MPA planning. This approach provided multiple perspectives on the topic, thereby allowing a better understanding of complex power dynamics than would be afforded by the application of a single method. First, I present an analysis of the existing hierarchy in power relationships among key organisations. I then present results on stakeholder perceptions of how the actors formed coalitions for or against MPAs or other marine conservation initiatives, and relate it to the perceived polarisation of opinion regarding MPAs. Finally, I analyse the self-reported network of information exchange, exploring opportunities and hindrances to potential collaboration regarding marine conservation. In the

following section, I briefly discuss some points in relation to the literature, but major findings are discussed along with results of other chapters in Chapter 7.

6.2 Hierarchy in power relationships

Both qualitative and quantitative results indicated that different stakeholders in the MPA governance regime had varying levels of influence over decisions and outcomes. While some of these differences were related to powers established in legal instruments, others were not explained by these formal structures. As detailed in Chapter 3, three quantitative methods were used to identify the influence level of different organisations. 1) answers to interview questions 5 and 6 (see Appendix 4) were analysed using the 'Hubs and Authorities' method described in Section 3.3.6, and quantifying power sources. 2) Question 15 of the online questionnaire (see Appendix 2) was analysed using a Kruskal-Wallis and post-hoc test to measure the level of influence of different actors; and 3) a media prominence analysis also gave an indication of highly influential actors within the system. These analyses were complemented by qualitative data from the in-depth interviews.

The results of the ranking of organisations with the Hubs and Authorities procedure indicated that there was a clear hierarchy among relevant actors. The first column in Table 6.1 shows the squared Authority Scores.[16] The first five stakeholders accounted for 61% of the perceived influence in the network, while the majority of actors were perceived to have little influence on decisions. A histogram of the Authority Scores (Figure 6.1) shows that from the 38 evaluated actors, influence was concentrated on approximately nine stakeholders (> 0.2), while 29 had little or no influence (≤ 0.2).

The second column in Table 6.1, and Figure 6.2, show the average of the influence level attributed to each actor in the online questionnaire. I found significant differences in influence levels between 19 actors (chi square=86.302, $p<0.05$) and a pairwise comparison indicated that organisations could be grouped in two classes: high-influence group (TSIC, TARFish and to a lesser extent FACs) and medium/low influence group. The organisations in the average-influence group did not have significant differences with either the high or the low influence groups.

[16] Because the sum of squares is one, these values give a clearer indication of the contribution of each value to the overall influence in the network.

The final four columns in Table 6.1 show the proportion of interviewees who identify a specific source of power for each actor. As detailed in Chapter 3, a political source of power included statutory powers, connections to decision makers and electoral pressure. An economic source of power referred mainly to an economic standing, the possibility of funding different projects or being able to finance lobby activities. An information source of power includes the capacity to create a convincing argument and the presentation (and potentially manipulation) of information. An expert source of power relates to the trust and prestige of specific people or organisations based on their specific expertise.

Table 6.1 Influence and sources of power of different stakeholders in the Tasmanian MPA governance system.

Squared Authority Scores (Hubs and Authorities results), average influence level (0 = no influence, 1 = low influence, 2 = average influence and 3 = high influence) and sources of power of MPA stakeholders

Stakeholder	**Squared Authority Score**	**Average influence level (SE)**	**Sources of power.** Percentage of respondents who mentioned that source (N=20)			
			Political	**Economic**	**Information**	**Expert**
Minister	0.13	-	90			
TarFISH*	0.12	2.5 (0.1)	55	40	40	
TSIC	0.12	2.7 (0.1)	55	85	35	25
Fish sectors	0.11	-	55	85	30	25
Labor**	0.07	-	60			
Liberal**	0.06	-	50			
DPIPWE	0.05	2.2 (0.1)	45		25	40
Parliament	0.04	-	45			
TPC	0.04	2.1 (0.2)	25		15	20
Fish clubs	0.04	-	40	25	25	
Other ministers	0.04	-	55			
FAC	0.04	2.2 (0.2)	35		30	35
IMAS	0.03	2.0 (0.2)			50	75
TCT	0.02	1.7 (0.1)	35	15	45	25
PWS	0.02	2.1 (0.1)	40		20	30
CSIRO	0.01	1.7 (0.1)			50	60
SCBOOT	0.01	2.1 (0.1)	20	15		
Greens	0.01	-	30			
Tourism Tas	0.01	-	15			
NPWAC	0.01	1.7 (0.2)	20			20
MAST	0.01	-	25			15
Marine Police	0	-	15			15
Diving operators	0	1.7 (0.1)		25		
Ocean Planet	0	-	15		25	15
Media	0	2.0 (0.2)	15		10	
Pennicott Cruises	0	1.9 (0.1)	5	20		
ET	0	1.6 (0.1)	20	15	35	20
EDO	0	-	20		20	
DEP	0	1.2 (0.2)			30	25
UTAS	0	1.4 (0.2)			20	30
Community groups	0	-			15	
Birdlife Tas	0	-		5	5	
NRM South	0	1.4 (0.2)		5	5	
Woodbridge	0	-				
High Schools	0	-				
Diving clubs	0	1.3 (0.2)				
SCAT	0	-				

*During interviews, many people ticked TARFish, but explained that they referred more to the recreational fishing sector in general, rather than a specific organisation.

**Most people referred to the party in power, rather than a specific party. Labor was mentioned because it was in power at the time of the Bruny case, and the Liberals were in power at the time of conducting interviews.

Figure 6.1 Distribution of influence in the Tasmanian network of actors with a stake in MPAs, as indicated by the squared authority score

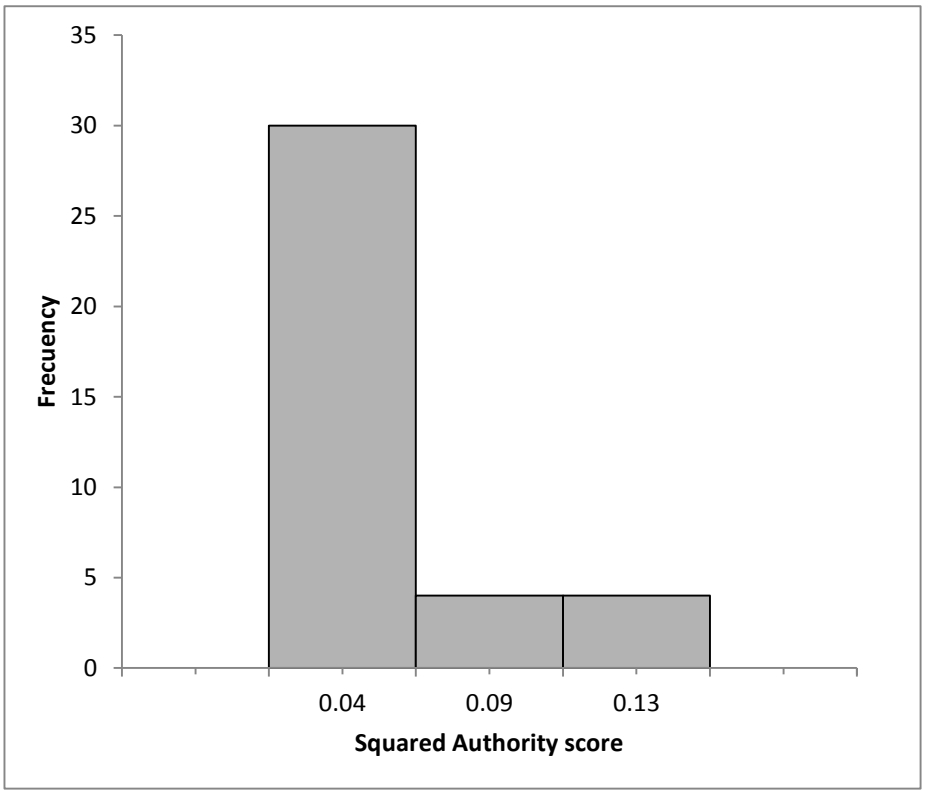
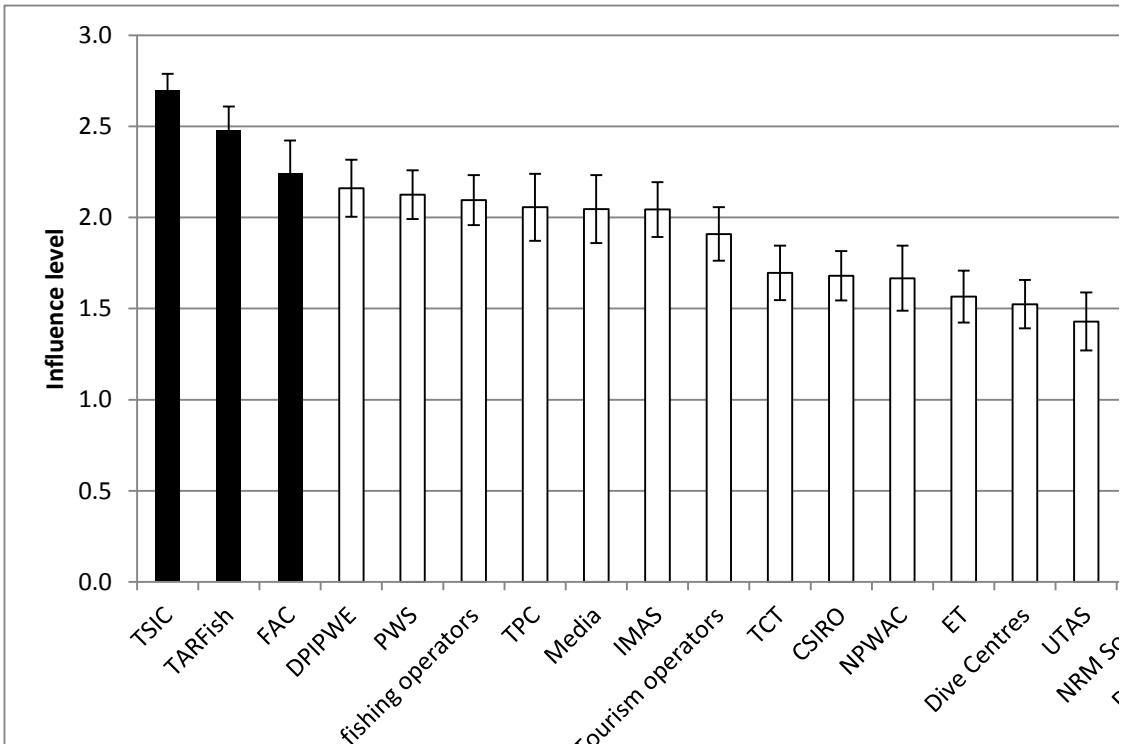


Figure 6.2 Average of perceived level of influence in the Tasmanian MPA governance system

(0 = no influence, 1 = low influence, 2 = average influence and 3 = high influence). N=26. Black columns indicate a high-influence group, as determined with a Kruskal-Wallis post hoc test.



A media search in two of the most important sources available online (details in Chapter 3) included 15 articles in ABC rural news and 21 articles in *The Mercury* newspaper. As (Grossmann 2013) showed in his studies of politics in the United States, media prominence tends to be highly skewed, with a few organisations mentioned several times, while the majority are rarely referred to, if at all. Not all influential actors might have high media prominence, but according to Grossmann (2013), those who do have a high chance of having the means to influence political decisions. Table 6.2 shows the prominence of different sectors and organisations in the media in relation to MPAs.

Table 6.2 Prominence of sectors and organisations in the Tasmanian MPA governance system, as indicated by number of times mentioned in key media communications N=36

Sector	Total	Subsector		Organisation/position/subsector	Number of times mentioned
State Government	64	(elected) State Government	36	General references	10
				Minister	19
				Labor	2
				Planning Minister	2
				Premier	2
				Cabinet	1
		State bureaucracy	28	TPC	24
				DPIPWE	1
				MAST	1
				PWS	1
				Police	1
Fishers	61			General references	12
		commercial fishers	31	General references	15
				TSIC	11
				Abalone industry	2
				Lobster industry	2
				TRLFA	1
		recreational fishers	18	General references	13
				Australian Recreational and Sport Fishing Industry Confederation (Recfish)	2
				Charter boat operators	2
				Recreational FAC	1
Conservationists			25	General references	7
				TCT	6
				ET	4
				Marine and Coastal Community Network	2
				Australian Bush Heritage Trust	1
				Ocean Planet	1
				Save Ralphs Bay	1
				Erith Mob	1
				Tasmanian National Parks Association	1
				The Wilderness Society	1
Politicians			6	General references	1
				Greens	3
				Liberals	2
Scientists			6	General references	1
				IMAS	3
				CSIRO	1
				UTAS	1
Community			4	General references	4
Tourists			3	General references	3
Divers			2	General references	2
Federal government			2	General references	1
				National Parks and Wildlife Service	1
local government			2	Tasman Mayor	1
				West Coast Council Mayor	1
tourist operators			1	General references	1
Other			3	future generations	1
				hospitality sector	1
				marine retailers	1

6.2.1 High-influence actors

The results from all the previous methods pointed first to the State Government as the most powerful actor. No political party was considered particularly influential, other than that in power (Labor at the time of the establishment of new MPAs in the Bruny, Davey and Twofold Shelf Bioregions, and Liberal at the time of writing this thesis). The Greens were deemed to have low influence (Authority Score = 0.1), even when part of a coalition with Labor from 2010 to 2014.

According to interview results, the sole source of power for decision-makers was political, which in the classification of power sources included statutory powers (see Chapter 3 for the classification of sources of power). The Minister responsible for the decision in each case was identified as the most influential actor. This was particularly true in the case of the Bruny Bioregion, as the Minister's decision to declare Marine Conservation Areas, rather than Nature Reserves or National Parks, did not require the decision to be approved by both Houses of Parliament according to the *Nature Conservation Act 2002*. As mentioned in Chapter 5, this concentration of power was perceived as excessive by some interviewees. Interviewee 17 suggested that if the Minister does not accept the TPC's recommendations, the decision should be approved by Parliament, "so at least there's a little bit more oversight". This interviewee argues that this additional control over the Minister's decisions would also take "some of the power away from lobby groups that could just convince the Minister", rather than several members of Parliament. As discussed in Chapter 5, this concentration of power had negative consequences on the quality of MPA governance; for instance, some interviewees believed it reduced fairness, inclusiveness, accountability and trust.

The non-government stakeholders with the highest influence level were fishers. Commercial fishers had a much higher media prominence than recreational fishers at the time of the TMPAS development and in the Port Davey and Kent Group designation process. In contrast, recreational fishers had as much media prominence as commercial fishers during the Bruny Bioregion designation process (Table 6.3). This is not surprising, considering that the designation of no-take MPAs in the Bruny Bioregion would have overlapped with important recreational fishing locations, which are also relatively close to important population centres (Greater Hobart and other regional centres in southeast Tasmania). Port Davey and the Kent

Group, on the other hand, are more remote and are not as important for recreational fishers as areas closer to more populated regions (Lyle *et al.* 2014a).

Table 6.3 Comparison of media prominence for commercial and recreational fishers during different processes in the development of the Tasmanian MPA system.

Process	Sector	References
TMPAS formulation (4 articles)	Fishers general references	0
	Commercial fishers	7
	Recreational fishers	1
Port Davey and Kent Group designation (9 articles)	Fishers general references	4
	Commercial fishers	8
	Recreational fishers	1
Bruny Bioregion designation (22 articles)	Fishers general references	8
	Commercial fishers	16
	Recreational fishers	16

Values are the sum of references to the sector in general or to specific organisations. N=36.

Interviewees believed that the most important source of power for commercial fishers was economic. Their importance for the State's economy has made them an important player, and according to interview results, both politicians and the TPC consulted them before the Bruny Bioregion public inquiry commenced. Economic standing, however, was not the only reason for relative importance in relation to other stakeholders. For example, the tourism sector had a larger contribution to the State's Gross Product (Tourism Industry Council Tasmania 2013), but they did not receive the same "special treatment", and were just another stakeholder during the inquiry. It could be a combination of economic importance, and other factors, such as the existence of a representative body, which represents other organisations with an interest in commercial fishing. Good organisational and lobby capacity could partly explain efficacy in influencing decisions. For example, one interviewee pointed out how good organisational capacity allows the TRLFA to interact directly with government, while less organised sectors in the fishing industry need to interact through the representative body. In comparison, tourist operators with an interest in marine conservation were not represented by a representative body advocating for their interests; this was probably related to a majority of tourism operators being land-based. Divers, which were a stakeholder with a direct interest in MPAs, had no official representative body to represent them. Advocating for or against a proposal was therefore more an individual effort for tourism operators, rather than a sectoral position. This might have diminished their influence, especially when different diver groups maybe had different

objectives and priorities. This low influence was reflected in all power indicators in Tables 6.1 and 6.2.

Recreational fishers were perceived to be highly influential, particularly in the Bruny Bioregion case. The main source of power for recreational fishers was deemed to be political, and was mainly related to a large number of voters. Interviewees explained that the large proportion of recreational fishers in the State gave them advantage in the political debate, as politicians were worried about electoral consequences of not considering their points of view. Lobby groups that mobilised a strong opposition to MPAs eventually managed to dissuade the Minister from establishing new no-take areas. Nevertheless, as discussed in Chapter 5, this group did not necessarily represent the views of the majority of the sector. In an analysis of political views in the United States, Fiorina *et al.* (2006) discuss a similar case where strongly committed leaders of interest groups tend to have an atypical set of values and levels of commitment. These authors further suggest that such leaders are not only unrepresentative of the population, but that they increase the sense of polarisation.

Interviewees who mentioned an economic source of power for recreational fishers referred mainly to the importance of recreational fishing expenditures to the local and State economy. As opposed to the commercial fishing sector, at the time of the Bruny Bioregion process, recreational fishers did not have an organised lobby capacity. Recreational fishers had a contested representation, as more than one body claimed to be the representative body. Some interviewees further mentioned that a large number of fishers were not part of any organisation. This explains why some interviewees identified TARFish as one of the most powerful stakeholders, but commented that they referred to the sector in general, rather than the specific organisation. Currently, TarFISH is recognised by the State Government as the representative body, and it has a large membership, mainly through member organisations, which in turn represent individual fishers. As Interviewee 19 indicated: “They are doing fairly well over the last five or six years, since Mark Nikolai has been involved with it. Prior to that, it was a bit of a no-tooth organisation”.

Although many individuals are still not associated to any organised group, today TarFISH might be in a better position to represent the views of the sector. As stated in their webpage, they can provide “the strength of a single unified voice speaking to government, industry and the community” (TARFish n.d.).

One interesting point is that many participants, regardless of their position on MPAs, seemed to give more importance to certain stakeholders, without a clear reason for doing so. This ranking broadly resembles the qualitative results, and was evident in the expressed necessity to work closely with some stakeholder (e.g. fishers), while others were not mentioned (e.g. Aboriginal groups). For example, Interviewee 22 stated that even though tourism is economically more important, "I probably would hold more respect of the opinion of commercial fishers than tourism operators in a weight type thing, even though I think [tourism] is important". Key stakeholders, such as divers, were not considered as important as other users, regardless of their possibly high stakes in the marine environment. This unconscious ranking of actors can explain why the opinion of certain actors is disregarded by politicians without a critical assessment, while other actors are not only welcomed to voice their opinion, but invited to do so. For instance, Interviewee 1 stated that "a Green or scientists saying something needs to be done, isn't going to have nearly as much weight as the fishing industry saying it". As discussed in Chapter 2, Lukes (2005) posits that certain forms of control are better explained by social constructs than by individual power. Therefore, this ingrained classification of actors in Tasmania could be partly explained by socio-cultural factors. For example, recreational fishing is an important element of the Australian culture, particularly in Tasmania with an overall participation of 26% of the population (Lyle *et al.* 2014a). The importance of this practice has historical roots, having both leisure and subsistence significance for early British settlers. This relationship with Australian natural environment was part of the process of establishing a national identity and therefore strongly embedded in culture (Franklin 1996). Frawley (2015) also considers that this activity has an important contribution to the well-being of fishers. These factors can explain the overall recognition of this sector by both fishers and non-fishers.

On the other hand, the dependence on the extraction of natural resources in Tasmania since colonisation (Bureau of Infrastructure Transport and Regional Economics 2008), partly explains the status given to the commercial fishing sector. This status is reflected in the quantitative and qualitative results in this study and the importance given in the legal framework and governance structures. For instance, the most important legislation for the sustainable management of the marine environment (LMRMA) regulates fisheries more than conservation; it is therefore the responsibility of the Wild Fisheries Management Branch of DPIPWE and the current Minister for Primary Industries and Water (DPAC 2015). The shaping of perceptions and preferences can be the most effective way of control, but, as in the case of fishers' status in Tasmania, it might not occur consciously, or be effected by a single actor (Lukes 2005).

While still in the high-influence or mid-influence groups, certain government organisations were perceived to have a minor role in the decision making process for the designation of new MPAs. For example, the participation of key organisations in the future management of MPAs, like PWS and the Police, was not different from most other stakeholders. Some government staff felt that it was difficult to have a position, even though their activities could be greatly affected by the presence or absence of MPAs. Public service ethics in Tasmania establishes that State Service should be apolitical (*State Service Act 2000*). Therefore, when debates become public, the participation of State employees can be constrained. This is in line with new public management[17], where public servants become accountable to a range of stakeholders, many times with contradicting views (Parker and Gould 1999). A tendency to silence government employees also reflects a general government aversion to criticism (Sawer *et al.* 2009). These authors believe that by trying to silence certain sectors through diminishing or conditioning funding, governments are wasting an opportunity to tailor policies to actual needs and circumstances. This could also be the case if governments fail to consult with staff in charge of implementing government policies.

The role of the TPC in the designation of new MPAs was crucial, as it led the compilation of relevant information, conducted public inquiries and incorporated different points of view. This formal role probably determined its high media prominence (Table 6.2). The extent of their influence over decisions, however, was considered medium to low by 61% of questionnaire respondents. According to one interviewee, in other circumstances their recommendations have been usually accepted by decision-makers. However, whenever the recommendations have been contrary to the view of politicians or certain sectors, TPC recommendations have had little weight (Gale 2008). This was probably the case in the Bruny Bioregion MPA process.

6.2.2 Low-influence actors

Actors with low influence have used several strategies to counterbalance this skewed distribution of power. For example, smaller parties like the Greens or independent politicians often have little influence over final decisions, either to push forward or veto specific policies. These politicians, however, have the means to initiate debate, sometimes effectively including certain issues in the agenda. Participation in advisory committees can also provide an

[17] New public management refers to reforms in public administration structure and procedures following a neo-liberal political ideology. These reforms aimed to transform the provision of public services to resemble private sector management, focusing more on improving economic performance (Parker and Gould 1999).

opportunity to include issues in the agenda and influence to a certain point final decisions. For instance, TCT has been a member of fisheries advisory committees for a long time; through regular presence and dialogue, TCT may have created a higher profile among other members and improved trust relationships. This can explain a higher authority score than other conservation organisations.

Other tools used by low influence actors include acquiring and using formal and informal knowledge of the governance system. For example, EDO has a clear understanding of the legal framework and participation mechanisms, as it is their area of expertise (Environmental Defenders Office 2016). With knowledge about key actors, most effective actions and best timing for different actions, they have been in a position to advise advocacy groups about the best strategy to have their opinions considered. One organisation also highlighted the value of having an informal social network of information; by obtaining key inside information, this organisation has been able to adjust its strategy to influence government decisions.

Conservation organisations used information as their main source of power, through gathering relevant information to support their position, building arguments to further their objectives and disseminating selected information to the public. Some conservation organisations have relied more on building an argument and lobbying relevant politicians to support their objectives. Tasmania is a small polity, which makes politicians more accessible to the general public and community groups than larger states or countries. Other organisations have used a strategy more reliant on public engagement and mobilisation. Local outreach and environmental education events, media communications and social media have been some of the preferred tools. Several interviewees, however, pointed out that most media sources are interested in controversies, rather than balanced discussions of an issue:

> They are biased in promoting what is most interesting and appealing. If it is controversial, because it creates intrigue; the boring stuff just gets pushed to the side or is not necessarily reported. They might not be deliberately biased in terms of wanting to change an argument; they are biased in that they want to be more popular in their commercial operation (Interviewee 20).

Interviewee 18, further commented that the media are interested in "a fight, and from our perspective that is not a good strategy to try and progress something like MPAs, because it won't be a rational balanced discussion".

Fiorina *et al.* (2006), Gilbert *et al.* (2009) and Dandekar *et al.* (2013) discuss how mass media and internet information sources have promoted polarisation elsewhere. The media, however,

can be a valuable tool to advance collaborative planning strategies, as illustrated by Hartz-Karp (2007). This author explains how several initiatives in Western Australia have used the media to provide balanced information to stakeholders and to invite the involvement of civil society.

The case of the research sector is interesting; on the one hand, survey results show that most sources of information are considered with caution. Scientific publications were the most trusted, compared to the media and to other sources (Table 6.4).

Table 6.4. Levels of trust of different information sources

1: I distrust all their information; 2: I distrust most information; 3: I trust some information and distrust other; 4. I trust most information; 5. I trust all their information.

Sources of information	Mean	SD
Mass media (TV, radio, newspapers)	2.42	0.64
Peer-reviewed publications (academic journals, books)	3.88	0.65
Bulletins/newsletters/web pages of specific organisations	3.08	0.69
Close friends and family, work colleagues or co-members of a group/organisation	3.12	0.52

Several interviewees, however, believe that politicians undervalue science, and that evidence-based decisions are more part of the rhetoric than of the actual decision-process:

> Governments love the phrase "evidence-based management" up until the point when it shows they need to do something that they don't want to do, and then political decisions get in the way of evidence-based management (Interviewee 21).

This ambiguity probably in part determines the medium level of influence of research organisations. While their view is highly regarded when an assessment is needed, it is not as welcome if it supports an unpopular decision. For example, the benefits of licencing all marine recreational fishing have been assessed (Frijlink 2012) and discussed in public (Parliament of Tasmania n.d.). However, as there is strong opposition from some in this sector, a decision on licencing has been deferred indefinitely.

The design of the Tasmanian political system and MPA governance system determines that the designation of new MPAs is a highly politicised process. Depending on the type of reservation, the decision needs to be approved by both Houses of Parliament, or just by the Minister. In the Bruny Bioregion case, the new areas were Conservation Areas, and therefore did not need

parliamentary approval according to the NCA. The Minister in turn is a politician popularly elected and a member of the majority party or coalition. Because re-election of politicians depends on popular perception of their performance, or at least that of the party to which they belong, they are prone to prioritise actions that improve their public standing. Politicians therefore tend to give priority to short-term results, rather than long-term benefits; they also respond to the perceived preferences of powerful interests, particularly those in their electorate, even if this compromises the interests of the community as a whole or of future generations (Armitage *et al.* 2007). As Interviewee 25 mentioned, "where you have very finely balanced politics, they are not being courageous". A highly politicised decision system determines that politicians will avoid a decision if they believe it goes against the preferences of an important section of the voting population. Political leadership supporting long-term benefits is therefore unlikely.

In this and the previous subsection, I have analysed the formal and informal hierarchy of the main actors in the Tasmanian MPA governance system. In the following section, I explore the degree of divergence of opinion among key actors, and argue that the actual level of polarisation is less than that perceived by participants in this study, and as that depicted in the public domain.

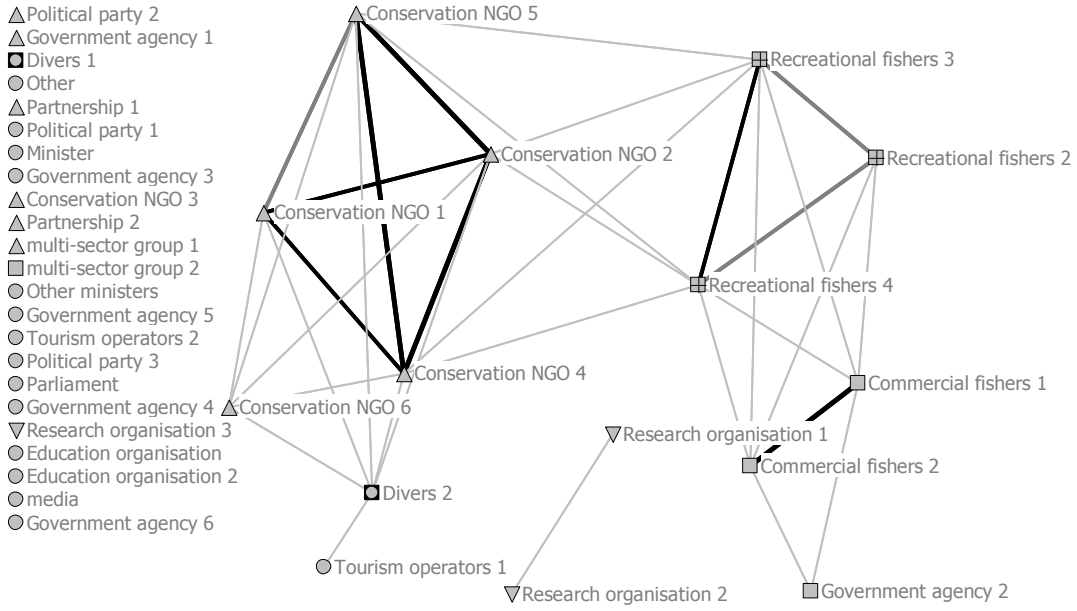
6.2.3 Polarisation of opinion

When asked to identify coalitions, either for or against MPAs, six interviewees said that they were not aware of any, or that they thought only loose coalitions existed. The results of the rest of the interviewees (17) were analysed using Social Cognitive Mapping (see Chapter 3), to identify coalitions or "interaction groups" (Neal and Neal 2013). If less than three people reported an interaction, this link was ignored. Weak links referred to links reported by three to nine people, and strong links to those reported by more than nine people. Figure 6.3 suggests a significantly compartmentalised network, with strong links within the conservation, commercial and recreational fishing sectors, and weak or no links across sectors. Like-minded people tend to create social links with each other, more than with people with different characteristics, a phenomenon known as homophily in Social Network Analysis (see Chapter 2). Like-minded groups in turn act as echo chambers[18], which can result in more polarised opinions (Baron *et al.* 1996; Gilbert *et al.* 2009). The perceived coalition network structure therefore suggests a high

[18] "Echo chamber" is a media concept that refers to the sharing of comparable opinions and the avoidance or misrepresentation of dissimilar ideas.

level of polarisation. An E-I index[19] allowed me to examine if this perceived network was characterised by high levels of homophily. To run the analysis, actors were divided in three possible groups: those with a primary interest in extractive activities, in conservation, and others (ambiguous interests). The overall network index was -0.6, which is significantly different ($p<0.05$) from the expected value of 0.283. This means that perceived internal links were much more prevalent than expected by chance. A statement by Interviewee 22 further emphasises this idea: "I would tend to say they [organisations in the list provided] mainly sit on one side of the fence or the other … Very few would come out balanced with the 'fors' and 'againsts'".

Figure 6.3 Perceived coalition co-membership in the Tasmanian MPA governance system N=17



Key: Shape indicate sectors (up triangle: conservation; square: commercial fishing; cross-in-box: recreational fishing; down triangle: research; circle-in-box: divers; circle: other). Line colour indicate strength of tie (grey lines: weak relations, reported by 3-9 people; black: strong links, reported by more than nine people). The weak links across the recreational fishing sector and the conservation groups referred to the opportunist coalition against the super trawler (Environment Tasmania 2014).

In contrast, other interviewees believed that this polarisation has been overplayed by the media and in political debates. Questionnaire results support the notion than polarisation has been exaggerated. In the questionnaire, organisation representatives were asked, out of 14 sectors, with which they "strongly agree", "mostly agree", "disagree on some points and agree on

[19] The E-I (external-internal) index measures the difference between links across groups and links within a group (Chapter 3). The lower the number up to -1, the more internal links (homophilic).

others", "mostly disagree" or "strongly disagreed" (See appendix 2 for the list of sectors/organisations included). Answers were converted to numerical values, from -2 (strongly disagree) to 2 (strongly agree). From 364 answers, most were neutral as they "disagree on some points and agree on others" (49.7%). Some respondents expressed that they "mostly agree" (23.6%) or "mostly disagree" (14.3%). Fewer respondents had stronger positions, answering "strongly disagree" (7.4%) or "strongly agree" (4.9%). Table 6.5 shows the average level of agreement of each respondent across 14 sectors. An average close to zero or positive suggests that respondents have more balanced views or tend to agree with most actors, and possibly that they are more open to dialogue; likewise, larger negative means and higher standard deviations can be interpreted as more disagreement and more extreme views respectively. Data in Table 6.5 are ordered from low to high standard deviations, rather than by their means, to show respondents from less to more extreme.

Table 6.5 Level of agreement/disagreement of respondents within different sectors and organisations

Answer scale: -2 (strongly disagree), -1 (mostly disagree), 0 (disagree on some points and agree on others), 1 (mostly agree), 2 (strongly agree). N=14. Responses are sorted from low to high standard deviations, as it gives a better idea of how "extreme" the views of a respondent are.

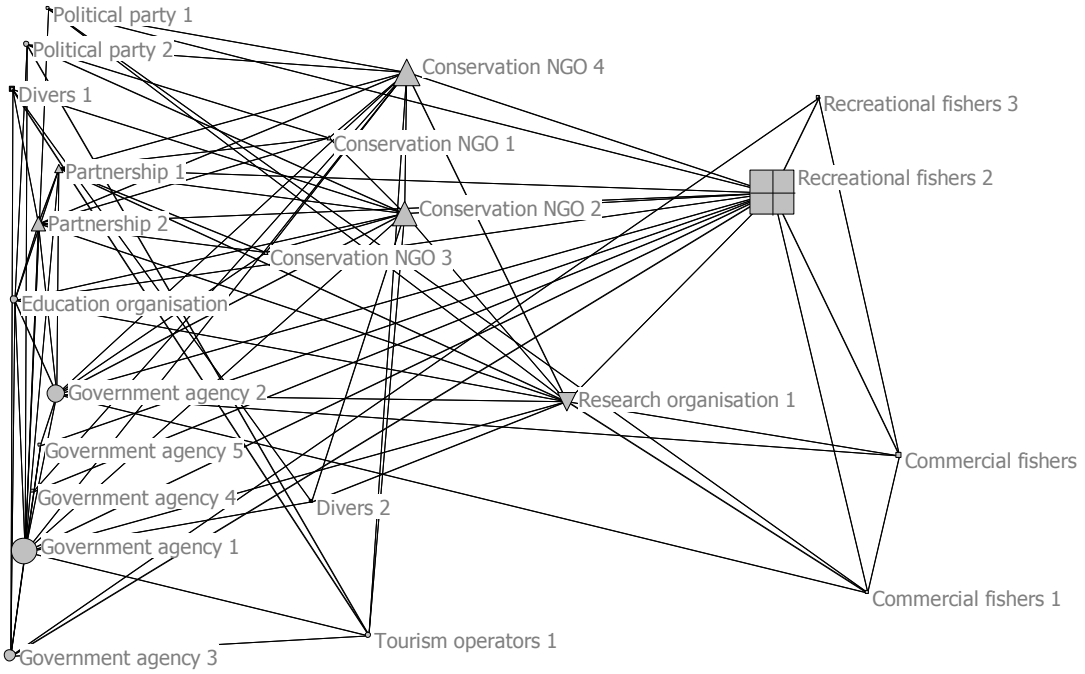
Respondent	Mean	SD
Recreational fisher 1	0.93	0.27
Tourism operator 1	0.07	0.27
Diver 1	0.14	0.36
Commercial fisher 1	-0.21	0.43
Recreational fisher 2	0.43	0.51
Scientist 1	0.14	0.53
Scientist 3	0.00	0.55
Scientist 8	-0.21	0.58
Conservation NGO 1	0.29	0.61
Diver 2	0.07	0.62
Scientist 2	-0.43	0.65
Government agency 2	-0.43	0.76
Government agency 3	0.00	0.78
Conservation NGO 4	0.00	0.78
Government agency 1	0.21	0.80
Political party 1	0.43	0.85
Partnership 1	0.79	0.89
Scientist 6	0.36	0.93
Partnership 2	-0.43	1.09
Recreational fisher 3	0	1.11
Scientist 4	0.21	1.12
Scientist 5	-0.29	1.14
Scientist 9	-0.71	1.27
Scientist 7	0.29	1.59
Conservation NGO 2	-0.64	1.74

Table 6.5 also shows that each sector comprises individuals with more or less extreme views. Some of the interviewees are involved in their organisation because they have a strong commitment to their views. As suggested previously, advocates of particular interests are usually unrepresentative of the majority of the population (Fiorina *et al.* 2006); therefore the low level of polarisation suggested by this study can be even lower in the general population. Questionnaire results also highlighted the existence of common ground between organisations that believe in the value of MPAs and those that are sceptical of MPA benefits. All respondents had a high level of attachment to marine environments in Tasmania (see Chapter 4), suggesting that there may be a common interest in maintaining the natural base into the future. As detailed in Chapter 4, a key source of disagreement lies in the value attributed to MPAs as an appropriate tool to control pressures and to reach conservation goals.

Interviewees were asked with which organisations they had had information exchanges related to MPAs or marine conservation. The self-reported information exchange network that resulted from this question (Figure 6.4) also suggests that if there was a strong ideological division, it was not preventing connections across sectors. Only reciprocated ties were included in the analysis as a link, focusing therefore on stronger relationships (Scott and Carrington 2011).

Figure 6.4 Information exchange network for Tasmanian MPAs

Node shape indicate sector (up triangle: conservation; square: commercial fishing; cross-in-box: recreational fishing; down triangle: research; circle-in-box: divers; circle: other). Size of the nodes indicate in-betweeness scores. Position of sectors is similar to that in figure 6.3, to allow a comparison between perceived alliances, and actual information exchange links.



The relationships between different sectors were analysed based on the following three groups: 1) *extractive* organisations were those with activities or objectives related to the extraction of marine resources; 2) *conservation* organisations were those with activities or objectives related to the conservation of marine resources; and 3) *other* organisations were those with activities or objectives related to both the extraction and the conservation, or not directly related to either. To understand the extent to which organisations preferred exchanging information with like-minded actors (homophily), an E-I index was calculated. The overall network index was 0.36, which is not significantly different (p=0.46) from the expected value of 0.34. This means that the observed ratio of external and internal links was not different from that expected by chance. Several studies indicate that homophily contributes to opinion polarisation (Baron *et al.* 1996; Sunstein 2009), even if other factors such as biased assimilation[20] also play an important role. As discussed in Chapter 5, interview results also pointed to the manipulation of debate by politicians and the media, exaggerating levels of polarisation. Baron *et al.* (1996) and Sunstein

[20] Biased assimilation refers to people being critical of new information that opposes their views, while readily accepting new information that confirms their views.

(2009) also discuss the role of selective internet content and social corroboration in augmenting opinion differences.

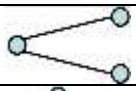
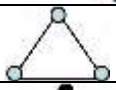
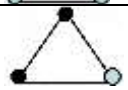
Robins *et al.* (2011) argue that actors in a network need to establish common goals and actions, as one of the requirements for collaboration. A second condition highlighted by these authors is the existence of social structures that can enable collaboration. In certain circumstances, actors in a network might prefer to interact through coordination mechanisms, which are more effective for seeking valuable resources like information. If the situation involves higher risks, however, actors might prefer cooperative relationships, which provides more scrutiny over commitments (Berardo and Scholz 2010). As previously mentioned, results suggested that all organisations had an interest in the sustainability of marine resources, albeit with different views on the role of MPAs. I therefore posit that the current network of stakeholders in Tasmania has the means to establish a common goal and start a conversation about information requirements and the most appropriate tools to achieve that goal. In the following section, I explore the existing network structures, and how these structures could enable or impede coordination and collaboration among different sectors.

6.2.4 Cross-sector coordination, brokerage and collaboration opportunities

The underlying structures of the self-reported information exchange network were analysed using PNet (Wang *et al.* 2009). For my purposes, I developed a model that included triangles and two-stars, structures that can respectively indicate the opportunities for collaboration and coordination (Lewis 2006; Robins *et al.* 2012). Using the same grouping as for the E-I index, I included in the fixed-density model the following cross-sector structures: activity (cross-sector links), o2a (related to cross sector bridging) and t2u (related to cross sector collaboration). Activity refers to cross-sector relations, while the latter two structures respectively give an indication of opportunities to establish cross-sector bridging and collaboration. Only *extractive* and *conservation* structures were included in the model, because for *other*, few were found in the original count, resulting in low convergence of models. Fitted model results are presented in Table 6.6.

Table 6.6 Exponential Random Graph Model of Tasmanian MPA information exchange network

Estimated parameters based on a model with fixed density of 0.36797.

Effects	Structure	Estimates (standard error)	t value
2-star		-0.02322 (0.10)	-0.24
Triangle		0.572919 (0.24) **	2.35
Cross sector collaboration (*extractive*)		-0.45755 (0.26) *	-1.75
Cross sector collaboration (*conservation*)		-0.18604 (0.16)	-1.15
Cross sector bridging (*extractive*)		0.365777 (0.14) **	2.53
Cross sector bridging (*conservation*)		0.120121 (0.07)	1.62
Cross sector links (*extractive*)		-0.84777 (0.41) **	-2.06
Cross sector links (*conservation*)		-0.42437 (0.45)	-0.95

Key: ** = significant at 0.05; * = significant at 0.1
In "structure", black circles indicate nodes with specific attributes.

During the process of fitting a model, triangles were significantly more common than expected by chance in most models. In the model depicted in Table 6.6, triangles in general were more common than expected by chance, but triangles across sectors were either lower than expected, or not significant. This suggests that there are currently few social structures in the network, which would allow collaboration across sectors. Relations between the extractive sector with other sectors are less prevalent than expected, but 2-star structures across the extractive sector and other sectors are more common than expected. This apparent contradiction can be explained by a majority of actors within the extractive sector having scarce connections outside the sector, but one actor having a key role as a bridging organisation between the extractive sector and other sectors. An analysis of the normalised betweenness centrality for reciprocal links (Freeman 1979) suggests that the most important bridging organisations in the network are TARFish (0.18), followed by TCT (0.1), PWS (0.1) and ET (0.09). Bridging links between subgroups in a network are regarded as one of the key elements for collaborative resource management (Armitage *et al.* 2007; McLeod and Leslie 2009; Bodin and Prell 2011). The existence of such ties in the Tasmanian MPA network suggests that some organisations could potentially lead a collaborative approach to marine resource management.

6.3 Chapter summary

This chapter focused on existent and potential power structures that affect the governance of MPAs and marine resources. Main findings were:

Ambivalence of power structures: Power can have both negative and positive impacts on natural resource management. In many cases, power has been related to unfair decision processes, but power is a necessary feature of positive leadership, coordination and brokerage processes.

Distribution of influence: Influence was concentrated in relatively few actors, mostly members of the commercial and recreational fishing sectors, some government agencies, and the relevant Minister.

Polarisation: Perceived differences in opinion and existence of coalitions hint to higher levels of polarisation than what specific results from interviews and the information exchange network suggest.

Social structures for collaborative approaches: An analysis of social structures in the information exchange network shows that there are opportunities for collaborative governance approaches, although across sectors relationships currently depend on a few bridging organisations.

The next chapter provides a general discussion of the most important findings of this study. I explore the underlying causes and consequences of main issues of governance quality and power. I use empirical examples from the literature to compare and contrast my results. I analyse relevant normative views that are applicable in the Tasmanian case to improve the governance regime. I conclude by bringing forth the intertwined relations between the different issues of governance quality and power. That general discussion provides the basis for articulating the recommendations from this study in Chapter 8.

Chapter 7 Synthesis

Governance is recognised as a key element of protected area effectiveness (CBD Secretariat 2004; Borrini-Feyerabend *et al.* 2012). There is a variety of governance types, and particular arrangements should fit the specific circumstances of each case (Borrini-Feyerabend *et al.* 2013). While governance regimes are expected to vary accordingly, a series of principles for any governance arrangement have been proposed (UNDP 1997; European Commission 2001; Lockwood 2010; Lockwood *et al.* 2010; Borrini-Feyerabend *et al.* 2013). This study used these principles (Chapter 2) as criteria to evaluate the quality of governance for Tasmanian MPAs (Chapter 5). Considering the impacts of power structures in governance regimes (Forester 1989; Healey 2003; Schneider *et al.* 2003; McCullum *et al.* 2004; Ansell and Gash 2008; Kende-Robb and Van Wicklin III 2008), in Chapter 6 I analysed the negative impacts of an unequal distribution of influence. Power, however, is also a necessary feature of adaptive governance requirements, such as leadership or multi-level coordination (Lockwood *et al.* 2012). I therefore conducted an analysis of network structures that can potentially enable certain actors to act as facilitators in a collaborative approach (Chapter 6).

In this chapter, I consider findings from Chapters 4, 5 and 6, and explore the underlying causes for the issues identified in these findings and the consequences for governance performance. I also discuss the possible interrelations between different issues, using similar and contrasting examples from other places. Normative views proposed in the literature are the basis for recommendations in Chapter 8. This synthesis is organised according to six key themes: governance quality; power structures that advance particular interests; polarisation; reduced trust; common ground; and power structures that advance common interests. So far in this thesis, while some interrelations have been noted, the primary focus has been on identifying and analysing each theme independently. However, complex interrelations between network configurations, power structures and quality of governance are also evident in the data. At the end of this Chapter, I therefore highlight the most important connections between these themes.

7.1 Governance quality

The quality of governance in MPA designation processes in Tasmania was analysed according to principles of good governance found in the literature (Chapter 5). In this section, I discuss the most important findings according to examples and normative precepts found in the literature in the following order: 1) inclusiveness and fairness, 2) accountability and transparency, 3) legitimacy, 4) performance. I finish this section by discussing some of the solutions proposed in the literature.

7.1.1 Inclusiveness and fairness

Including all relevant actors in a decision-making process ensures the basic right of individuals and groups affected by that decision to express their concerns and points of view (Lockwood 2010; Ban *et al.* 2013). Inclusiveness also has the advantage of bringing to the table different kinds of information, which might be a key component in the solution of so-called wicked problems[21] (Rittel and Webber 1973; Weber and Khademian 2008; Ban *et al.* 2013; Head and Alford 2015), and to face rapidly changing conditions (Berkes *et al.* 2003; Charles 2007; Lockwood *et al.* 2012). Inclusiveness has also been linked to stakeholder support, which in turn facilitates implementation (Living Oceans Society and World Wildlife Fund Canada 2005; Lockwood 2010). The process of zoning and governing the Great Barrier Reef Marine Park has aimed to include the views of different stakeholders, including special legislation to provide for Indigenous involvement (Day 2016). The process of selecting and involving stakeholders, however, is complicated. As the issues of stakeholder selection are closely related to power structures, this issue will be analysed in section 8.2.

In order to realise the benefits of an inclusive processes, leading agencies and participants must genuinely value the potential and actual contribution of different stakeholders. Tasmanian MPA planning processes were open to all interested parties. TPC analysed public submissions, and their reports included how this input was considered or if comments were beyond the scope of the terms of reference. However, there are no clear criteria for processing information that lack the proper support of data or publications, as is the case of emotional or anecdotal inputs. On the other hand, the process followed by the Minister after receiving TPCs recommendations is not clear. Some interviewees mentioned that only the advice of selected stakeholders was

[21] Environmental problems have been described as "wicked", because they involve the interplay of biophysical, economic, social, cultural and institutional dimensions. As many of these dimensions involve opinions and social constructs, problems lack a definitive formulation and therefore science alone is unable to provide solutions.

considered, effectively excluding the input of many of the consultation participants and apparently resulting in a biased decision.

Another related issue concerns the input that low-level but experienced employees can provide in a planning process. Different governance ideas have permeated government structures and functions in Australia at all levels, including New Public Management, network governance, meta-governance and devolution of power to less centralised levels (Parker and Gould 1999; Lockwood and Davidson 2010; Lockwood *et al.* 2010; Robins *et al.* 2011). Despite these reforms and innovations, the role of government remains central and hierarchical in decision-making (Halligan 2015). Several comments in this study indicate that the contributions of lower-level Government staff are usually disregarded. Strongly hierarchical institutions are less likely to include the input of operational staff, even though that input would be pivotal in the implementation of an adaptive management system; this is particularly important when facing wicked problems that require more than one person's knowledge (Head and Alford 2015).

While engagement methods led by TPC are mostly regarded as open and transparent, formal procedures (Figure 4.2) are too general to account for differences between processes and stakeholders. Methods have to be tailored to reach the different audiences that need to be involved in the process (Reed 2008). One example cited in this thesis is the fact that not all fishers have easy and regular access to the Internet, or that some might have insufficient literacy skills to deal with the complexity of some of the documents produced during the inquiries. The exhibition of inquiry documents and request for submissions for any consultation are publicly advertised online, in the gazette and some newspapers. Many stakeholders, however, do not read these publications, so most actors will only learn about the opportunity to comment if they are active members of relevant policy networks. Similar concerns have been raised in other circumstances, and are closely linked to power imbalances (Ansell and Gash 2008; Reed 2008). For example, in a journalistic analysis of the forestry debate in Tasmania, some loggers claimed that forestry spokespeople did not represent their views, but they felt that they lacked the appropriate skills to articulate their own arguments and voice them (Krien 2010). A systematic assessment of stakeholders, discussed in section 8.2, before initiating a consultation process can guide the selection of specific tools.

Another important issue raised in this study, was the need to start public engagement early in the decision making process. Most consultation processes in Tasmania invite public comment once the problems to be addressed have been identified (in this case study, biodiversity loss)

and the solutions have been devised (in this case study, the establishment of an MPA system). Several authors recommend involving all relevant stakeholders from the beginning of the process, rather than request comments on pre-conceived actions (Reed 2008). In many cases, this early involvement needs to start by framing the problem (Schusler *et al.* 2003), but can also involve the validation of the selection of stakeholders invited to participate (Living Oceans Society and World Wildlife Fund Canada 2005; Reed *et al.* 2009). This is particularly important when dealing with contentious issues (Sewell *et al.* 1989). A clear example is the initial failure to establish an MPA system in Californian waters in the United States. With a strong scientific basis, MPA proposals were presented to the community in 2001. Commercial and recreational fishers reacted to these proposals with outrage, effectively bringing to an end this first attempt. One of the key reasons was that these stakeholders had not been previously consulted, so that presentation of printed maps showing new proposed reserves gave these stakeholders the impression that they were being presented with a *fait accompli* (Weible 2008).

Face-to-face dialogue opportunities are fundamental to building trust (Schusler *et al.* 2003; Pahl-Wostl and Hare 2004; Ansell and Gash 2008; Dryzek 2010; Roberts and Jones 2013; but see Muro and Jeffrey 2008). As discussed in section 8.4, trust in turn is fundamental for collaborative approaches, but usually requires significant time to develop, particularly in cases with high levels of conflict. In Tasmania, planning inquiries are limited in time and scope. Dialogue opportunities are restricted to a few hearings, in which key stakeholders are invited to present information and participants can briefly comment. Communications in these venues are mostly one-way, with a panel receiving information from various sources, but with limited deliberation. FACs and the NPWAC are probably an exception, as these forums meet periodically to discuss ongoing and emerging issues. Several authors highlight the need to establish long-term collaborative efforts to manage natural resources (Pahl-Wostl and Hare 2004; Keough and Blahna 2006; Govan *et al.* 2009a). Stakeholders have to be involved beyond the consultation step in the planning phase, in order to promote local stewardship. Participation should be an ongoing process of planning, implementation, monitoring of agreements and outcomes, and adjustment of plans. In an example of community-based management, ongoing discussions about action plans, monitoring results and adjustments have supported a successful system of Locally Managed Marine Areas in the South Pacific (Govan *et al.* 2009a).

An inclusive, ongoing deliberative process, however, does not guarantee a high level of participation. Participation levels vary significantly, depending on the trade-offs perceived by stakeholders between incentives and costs. For this reason, the design of a participatory process

needs to consider ways to increase involvement. For example, power imbalances and unfair decisions discourage participation, but stakeholders will be motivated if they believe that their participation will be reflected in final decisions; participation will also increase if actors believe that the achievement of their goals depends on the commitment of other stakeholders (Ansell and Gash 2008). According to the findings of this study, actors involved in the MPA planning process currently lack most of these motivations. An incremental process, in which stakeholders build momentum from small goals towards bigger challenges, can increase motivation to participate (Living Oceans Society and World Wildlife Fund Canada 2005; Ansell and Gash 2008; García *et al.* 2014; Schirmer *et al.* 2016). Such incremental processes could help create the necessary interest in Tasmania to participate in a collaborative effort.

Another important incentive for stakeholders to participate in a collaborative process is the absence of alternative venues to advance their positions. Ansell and Gash (2008) explain that if participants believe they have a better option of influencing a decision in court or by lobbying decision-makers, their commitment to a collaborative process will be low. If the only option for reaching a decision is through a collaborative process, participation increases. For example in Nevada, United States, a classical confrontation between pro-development parties and environmentalists started when the desert tortoise was listed as endangered; as this action stopped further development in the area, local developers and local and State governments sued the Department of Interior. When the court invalidated this claim, the only possibility left was to engage in a collaborative process. Although the process was far from perfect, the results showed that collaboration was possible, even when participants have substantially different positions (Reilly 1998). In the case of Tasmanian MPAs, there have been alternative ways of influencing decisions, namely lobbying the relevant Minister. This avenue was particularly suited to the interests of lobbyists, as the legal framework does not compel the decision maker to follow the recommendations from consultation processes. A different example in Tasmania can be drawn from the forestry debate. As the usual decision-making process had not solved years of bitter and sometimes violent confrontation, the key contenders decided to initiate a deliberative approach to solve profound conflicts (Schirmer *et al.* 2016). Although the final agreement was repealed when the Liberal party gained power in 2014, the deliberative process generated longer-term trust and commitment for working together.

7.1.2 Accountability and transparency

Legal frameworks and formal institutions that establish responsible agencies and governance arrangements have an important influence on governance quality. In previous chapters, several problems were detected at this level, including unclear roles, divisive responsibilities and highly politicised decisions. This clarity of roles and responsibilities of government agencies and personnel are necessary to increase accountability (Lockwood 2010; Borrini-Feyerabend *et al.* 2013).

The procedure for MPA designation inquiries has been transparent, providing relevant information to the public, including background information, planning proposals, and consideration of submissions. In contrast, the Minister and Cabinet are not required to keep public records of discussions, or to provide a justification if they decide to dismiss TPC's recommendations. If those decisions need to be approved by Parliament, there is another option for public scrutiny. If decisions are only tabled, as in the case of the MPA designations in the Bruny Bioregion, these do not need to be explained. The principle of transparency is based on ethical grounds, respecting the right of affected people to know why and how decisions are made (UNDP 1997; Lockwood 2010). It is also a requirement to create and maintain the trust of stakeholders in decision-makers and to legitimate decisions.

7.1.3 Legitimacy

MPA consultation processes in Tasmania used scientific information on habitat distribution to address representativeness of the MPA system. Scientists and marine research organisations that generated this information are recognised for their high scientific quality (Australian Research Council 2016). Unfortunately, not only are there significant information gaps (Bennett *et al.* 2015), but available information is characterised by varied levels of uncertainty (Jasanoff 2003; Hobday *et al.* 2006). The production of relevant science is subject to technical and budgetary limitations, which prevents covering all information gaps and reducing uncertainty. As discussed by Head (2010), government funding for research and monitoring is usually allocated on a short-term basis, whereas monitoring programs to evaluate the effectiveness of policies need to be long-term. The inadequacy of management plans and associated monitoring programs for Tasmanian MPAs is discussed below within Section 7.1.4.

There are other problems associated with evidence-based decisions. For example, scientists are not exempt from personal values and beliefs, or from furthering personal or third party interests

(Jasanoff 2003; Head 2010; Lewandowsky and Bishop 2016). The extreme positions of some scientists found in this study can be an indication of deep values, which might affect their objectivity. Some interviewees also blamed scientists of being biased, due to their associations with interest groups either from the fishing industry or from conservation organisations. Juntti *et al.* (2009) found that in Europe, decisions that balance environmental and socio-economic variables are few, some decisions use evidence selectively to legitimise policy decisions, and some even disregard it completely. These authors further describe how decisions on what constitutes good evidence are also informed by power structures and embedded assumptions (see section 8.2).

One of the arguments against MPA processes in Tasmania was that, even though the information on ecological representativeness was sound, the TPC only had limited information on socio-economic issues (Resources Planning and Development Commission 2008). This might have reduced support and credibility of the process with some sectors. One interviewee commented that an assessment on pressures, risks and best management options should have complemented information on representativeness. With that information, it would have been possible to decide if establishing MPAs was the best management option, or if other management strategies could have been used to address those threats. No-take MPAs can have important benefits on biodiversity, biomass and fisheries (e.g. Edgar and Barrett 1999; McClanahan 1999; Roberts *et al.* 2001; Gell and Roberts 2003; Hilborn *et al.* 2004; Barrett *et al.* 2007; Barrett *et al.* 2009)); they can also increase the resilience of a system to external threats such as climate change (Hughes *et al.* 2003; Bellwood *et al.* 2004; Babcock *et al.* 2010). In other circumstances, no-take MPAs can be ineffective to deal with external pressures such as pollution or invasive species (Carlton 1989; Allison *et al.* 1998), or even have negative socio-economic impacts (Hilborn *et al.* 2004; Mascia *et al.* 2010; van de Geer *et al.* 2013). In those cases, other management options could be more appropriate to deal directly with the source of the threat or to offset the costs of no-take MPAs.

Several authors have highlighted the importance of other place-based approaches to conservation (McClanahan 1999; Borrini-Feyerabend *et al.* 2004; Govan *et al.* 2009a). Policies and strategies need to consider ocean biodiversity beyond MPAs to tackle external and long-ranging threats (Allison *et al.* 1998; Bellwood *et al.* 2004; Toropova *et al.* 2010). To address these needs, Aichi target 11 (see note 4 in Chapter 4) addresses the designation of protected areas, but adds a note to include "other effective area-based conservation measures, and integrated into the wider landscape and seascape". In 2013, the Subsidiary Body on Scientific,

Technical and Technological Advice of the CBD discussed the need to clarify what constituted other effective area-based conservation measures. In 2015, IUCN established a task force to advance these ongoing discussions, with the aim of developing a consultation draft in 2017 and present final guidance for the 14th meeting of the CBD. While the importance of complementary in-situ conservation strategies has been officially recognised in international arenas, the concept was still under development at the time of writing this thesis.

Probably the most problematic aspect in the Tasmanian planning regime is the fact that decision-makers can disregard the evidence from consultation processes. Although recommendations from the TPC are usually taken on board, at least partially, the system allows the Minister to make a completely different decision, without needing to explain or without the overview of a third party. A highly controversial process can trigger a Minister's urge to override the consultation process. For example, another highly contentious issue in Tasmania, the Gunns Pulp Mill project, also resulted in the Government withdrawing assessment of the proposal from the planning system. To support an expeditious decision about this project, the Government established the *Pulp Mill Assessment Act.* In an analysis of quality of governance, Gale (2008) showed how achieving a rapid decision was pursued at the expense of transparency, openness and horizontal accountability.

Tasmania is a small state with a well-connected community, and this can facilitate the effectiveness of lobbying efforts, even when these efforts are generated by a relatively small number of stakeholders. Bibby (2013) argues "This can have advantages. People are friendlier, the sense of community is strong, and it can be easy to get things done. But occasionally it can be too easy to get some things done". Lobbying, by both sides of an argument, has been commonplace in Tasmanian environmental debates (Baidya 1984; Sewell *et al.* 1989; Gale 2008; Krien 2010). As discussed in section 8.2, powerful actors have an advantage when influencing final decisions. In the case of the Gunns Pulp Mill debate, the boundaries between Government and industry became "blurred", allowing industry members to dominate the process (Bibby 2013). As happened in the Bruny Bioregion Inquiry, a decision informed by specific lobbyists, effectively left out the views of many stakeholders or favours particular interests. The resulting decisions are perceived as unfair in that they privilege certain stakeholders' interests. This is turn can undermine wider stakeholder support for and trust in decision making processes, thereby undermining "earned" legitimacy (Lockwood 2010).

Consultation that does not inform final decisions can be considered a token participatory process (Arnstein 1969). The consequences of deceiving participants in this way are not limited to the particular decision at stake, but resonate in the overall governance regime and the legitimacy of a democratic government. Token participatory processes are not transparent, reducing trust of participants, and generating long-lasting apathy in the general public. Ansell and Gash (2008) discuss how the incentive of different stakeholders to participate is affected by the perception of how their input would be actually be used in the final decision. A symbolic participatory process can also lose one of the main benefits of an inclusive approach to planning, which is the integration of different forms of knowledge (Berkes *et al.* 2003).

7.1.4 Performance

Leadership is a key requirement for adaptive management of natural resources (e.g. Ansell and Gash 2008; Lockwood *et al.* 2012). It is necessary to create a long-term vision, to give direction to a process, and to embark in collaborative approaches to planning. Political leadership and social entrepreneurship require strong commitment and appropriate skills and resources (Selsky and Smith 1994; Weerawardena and Mort 2006). Ansell and Gash (2008) point out that all leadership attributes do not need to be concentrated in one person or organisation. Different steps of a process might require the involvement of different kinds of leaders. But various kinds of leaderships are interdependent. If a local leader mobilises a community in a collaborative approach, they will eventually need the backing of higher-level leaders to institutionalise the process and to formalise agreements. In the same way, leaders at higher levels depend on local leaders to generate necessary input and support.

Policy tools such as the *Natural Heritage Strategy* (Department of Primary Industries Parks Water and Environment 2013) and the TMPAS (Marine and Marine Industries Council 2001) give direction to sound environmental planning. For example, the former calls for a landscape and adaptive approach to manage natural resources. Specific actions include the incorporation of resilience, coordination and collaboration structures into the management and planning system. Unfortunately, these strategies lack the political weight to be of much consequence. Government and agency leaders have failed to develop or drive implementation programs that would have given substance to such strategies. For non-mandatory policy tools, a set of incentives needs to be in place to encourage their implementation. In Tasmania, opposition from powerful actors is a clear disincentive for actions that further control the use of marine environments.

The Resource Management and Planning System was designed to lead integrated approaches to planning and decision-making. Several policy tools exhort the Government to integrate planning across sectors, and increase coordination between different levels of government, different agencies and terrestrial and marine management (e.g., *Natural Heritage Strategy*, *Tasmanian State Coastal Policy 1996*, *Oceans Policy*). In an analysis of marine governance regimes in three regions of Australia, Lockwood *et al.* (2013) analysed how each performed according to adaptive governance requirements. The governance regime for the Tasmanian East Coast, among other deficiencies, lacked both integration and coordination. This study confirmed that the implementation of these precepts remains at a very low level.

A separate issue that was rarely mentioned in this study was the performance of existing MPAs. The main purpose of establishing an MPA system is to "contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Tasmania's biological diversity" (Marine and Marine Industries Council 2001). The TMPAS includes a section on management of the MPA system, but political pressure has been mainly focused on designation of MPAs rather than on implementation. This focus on numerical targets instead of ecological representation, conservation needs and effectiveness is not isolated, and is similar in the rest of Australia (Barr and Possingham 2013; Barnes 2015; Grech *et al.* 2015), and around the world (McClanahan 1999; Agardy *et al.* 2003). In a global study of 87 MPAs, Edgar *et al.* (2014) found that more than half were not different from unprotected waters. Ineffective MPAs lacked key features, namely appropriate size, sufficient time to accrue benefits, appropriate protection or enforcement, or no-take status. For this reason, implementation and monitoring of progress should accompany MPA designation. The importance of effectiveness has been amply discussed (e.g. Pomeroy *et al.* 2004; Hockings *et al.* 2006; Laffoley 2008; Lester *et al.* 2009; Toropova *et al.* 2010; Worboys *et al.* 2015),), and the Programme of Work on Protected Areas of the CBD, for example, clearly set goals and actions to monitor effectiveness of protected areas.

The neglect of existing MPAs in Tasmania is probably a consequence of the short-term focus on designation. Few MPAs have management plans and the existing ones are out of date or pending approval. Management strategies proposed in those plans have not been executed, and limited financial and human resources are invested in MPAs. Additionally, coordination between PWS and supporting agencies and organisations could be improved. According to the TMPAS, a monitoring program was to be established to assess individual MPAs and the system as a whole. Those results of monitoring and research where to "be fed into the management

planning process" to "ensure that the management plan of each MPA is based on the most up to date information available" (Marine and Marine Industries Council 2001). While IMAS has conducted periodic surveys of some MPAs (Edgar and Barrett 1999; Barrett *et al.* 2007; Barrett *et al.* 2009), this information has not been used to update or even to develop management plans. A monitoring system for all PWS was finalised in 2013 (Parks and Wildlife Service 2013). The goals of this system are to provide feedback in an adaptive management cycle, and to increase transparency and accountability by showing how public funds are invested. This system urges the participation of external stakeholders and experts, as well as staff members. If this system were to be implemented, a first step would be to develop management plans, with specific objectives and appropriate indicators of status and impacts. The responsibility of developing and implementing management plans legally lies with PWS. However, as one interviewee pointed out, before developing a management plan, the director needs the approval of both the Minister for Primary Industries and Water, and the Minister for Environment, Parks and Heritage.

Global change and the increasing complexity of interrelations between social and ecological systems put pressure on governance institutions. Under these circumstances, new governance systems, more collaborative and open to innovation, have emerged (Ansell and Gash 2008). Asa climate change hotspot, Tasmania (Hobday and Pecl 2013) is particularly in need of new planning and management paradigms. Lockwood *et al.* (2012) identified the requirements for adaptive management of marine resources. These requirements include: good understanding of the socioecological system; networks to share information and learning opportunities; decision-makers and stakeholders open to change; new ideas and experimentation; institutional forms that can adapt to unexpected and rapid change; leadership that enhances collaborative approaches and appropriate capacity (skills, funds and other resources); effective engagement and the capacity to deal with conflict; cohesion and direction across geographical, jurisdictional and sectoral boundaries; and quality governance. These authors found that most requirements had a poor performance in Tasmania. In order to improve adaptive governance, Tasmania would need to deal with existing conflicts, both within Government and between stakeholders. It would also be necessary to build trust in the MPA system and address its capacity shortages. I posit that trust in Tasmanian MPAs depends on evidence of MPA effectiveness. Evidence of benefits would require a design based on sound ecological information. Further, management plans would need measurable objectives with key indicators to be monitored in the long term. Public engagement through communication, advisory groups or citizen-science can improve governance and ultimate outcomes.

Poor governance results thus in a series of consequences that, in a vicious cycle, affect the performance of the regime. The prescribed engagement tools used in the planning system of Tasmania do not encourage an ongoing and rational dialogue. This in turn increases the misunderstandings and exacerbates differences of opinions. Key actors have few chances of engaging in social learning processes, in which they could build empathy for other sectors and find common ground. Under these circumstances, trust relationships are very difficult to create or maintain. Trust in turn is fundamental in a collaborative approach to manage common-pool resources and to try solving wicked problems. Non-tailored or inappropriate methods of participation also reduce willingness to participate. Direct participation in decision-making processes tends to be low on most people's priorities. If participant's inputs are not reflected in final decisions, the interest in participating will become even lower (Ansell and Gash 2008). I finish this section by briefly discussing some of the proposals found in the literature to address these problems.

Rational, open dialogue helps stakeholders to understand why others have a specific position and assists in determining their values. Face-to-face interactions help the establishment of personal relationships, and these can often be based on unrelated topics. Under these circumstances, there is a better chance of building empathy across different sectors. Such a process, sometimes referred to as social learning (Pahl-Wostl 2002; Schusler *et al.* 2003; Pahl-Wostl and Hare 2004; Keen *et al.* 2005; Armitage *et al.* 2007; Berkes 2009) or mutual understanding (Ansell and Gash 2008), helps build trust among participants. Under the right circumstances and effective facilitation, it might also allow stakeholders to find common ground and eventually formulate shared objectives. Respect, trust and common purpose are essential elements of collaborative approaches to natural resource management (Reilly 1998; Innes and Booher 1999; Hartz-Karp 2007; Robins *et al.* 2011; Long *et al.* 2013). Collaborative governance might be initiated by government agencies (Ansell and Gash), but many collaborative modes of governance have been initiated by communities or other non-government actors, and public agencies became involved once the process was underway (Govan *et al.* 2009a; Emerson *et al.* 2012; García *et al.* 2014). In this study, however, most respondents accept the Government as the legitimate decision-maker, even if they do not agree on how decisions are made. This acquiescence would call for strong leadership if non-government actors were to initiate a collaborative approach to marine conservation.

In order to add credibility to a participatory process, Government or responsible agencies should be guided by the same principles of good governance as the ones they promote (Islam 2013).

Influenced by corporate management, the approach to natural resource management has changed. It is no longer enough that managers direct actions and coordinate people. Managers need to have leadership skills, making sure that their staff work as a team, motivated to reach specific goals and to solve problems. A good leader listens to their staff and values their contributions, and develops teams that can work collaboratively. Apart from developing teamwork inside their organisation, a leader is able to navigate a network of external collaborators and stakeholders (Londoño *et al.* 2015). This change, however, is very difficult, as there are entrenched assumptions about the expectations from and responsibilities of each group or individual within a hierarchal arrangement.

New paradigms of leadership, where all members of a team are valued for their contribution, are also a key component of adaptive management. Natural resource management inevitably has to rely on incomplete information and a variable level of uncertainty (Jasanoff 2003). This level of uncertainty is heightened by changing conditions, associated to global change in general, and climate change in particular. To deal with uncertainty and changing conditions, adaptive management is required (Olsson *et al.* 2004; Armitage and Plummer 2010). Adaptive management is a cycle of constant learning, where planning, implementing and evaluating mutually inform each of the other phases. A series of management objectives inform the most appropriate strategies and actions. The selection and monitoring of indicators provide evidence on which the planning and implementation phases can be adjusted. Reporting of results provides transparency to the management process and the responsible agency. On-the-ground experience and experimentation become a key input in the management and planning cycle. With this purpose, leadership is needed at various levels; at high levels to create a vision of resilience in the planning and management system; at intermediate levels, to bring together different sectors and facilitate shared meaning of the process; and at the local level, to make implementation feasible. Brokerage leadership can also build bridges across levels or sectors, increasing communication and coordination in a multi-level system (Cash *et al.* 2006; Long *et al.* 2013).

7.2 Power structures that advance particular interests

In Tasmania there is a highly skewed distribution of influence regarding MPAs, with most power concentrated with a few actors. This unequal distribution of influence was reflected in the way various stakeholders were ranked as more or less important by survey respondents. As part of the engagement process adopted for Tasmanian inquiries into the designation of new MPAs,

selected stakeholders were contacted before the inquiries were made public. This gave these stakeholders privileged access to the process and greater opportunity to influence the outcomes. Other stakeholders were afforded opportunities later in the process to make submissions, but there was no transparency about the rationale for given selected stakeholders early access, or why these particular individuals were chosen. This exposes the process to accusations of bias and opportunities of undue influence.

Schneider and Ingram (1993) posit that treatment of actors, agenda setting and policy choices are informed by the social constructions surrounding them, and by their relative power. According to this theory, there are four categories of actors: strong and positively constructed (advantaged); strong and negatively constructed (contenders); weak and positively constructed (dependents); and weak and negatively constructed (deviants). They note that for advantaged actors, benefits tend to be oversubscribed and burdens undersubscribed. This makes sense when decision makers are politicians expecting to be re-elected, as benefiting this group of actors will support the group and the population at large. In contrast, weak actors who are positively constructed (dependents) tend to obtain limited benefits; politicians are disposed to show their interest through symbolic policies that minimise actual investments (Schneider and Ingram 1993).

Constructions tend to be dynamic in time, and subject to manipulation by different parties, such as politicians in power, opposition political parties, the media, artists and scientists (Schneider and Ingram 1993). I suggest that it is easier to manipulate the image of actors who have unclear constructions. For instance, in Tasmania environmentalists are both positively and negatively constructed by different sections of the population (ambiguous construction), and divers might not have a clear construction. Powerful politicians will use their own ideologies to re-classify certain groups, depending on specific goals, or to align their own constructions to reflect images that are more popular. With the growing awareness of environmental issues (Dunlap and Van Liere 1978), environmental groups have gained positive backing from the general public. In Tasmania, such support was manifest in the early environmental debates (Sewell *et al.* 1989). But as environmental claims started to block development initiatives such as logging old-growth forests (Krien 2010), politicians used specific discourses in an attempt to change the public's perception of environmental groups (Gale 2008). A clear example is an article by Barnett (1999), which pictures the Greens as interested in economic stagnation, rather than in the defence of the forest. In the case of forestry debates, these constructions were manifest in overt aggressions, including bumper stickers like "Save a job, shoot a greenie" and even physical

violence (Krien 2010). From this study, I infer that currently, there are variable opinions about environmental organisations. The constructions of such groups, and as a consequence of the issues they advance, range from positive (e.g. "defenders") to negative (e.g. anti-development). Considering that the power of NGOs is limited, following Schneider and Ingram's theory, most policies will tend to have only symbolic benefits for NGOs and their constituencies or create burdens. For example, in Tasmania, the Labor party have policies that openly support MPAs, but during several periods in power, they made little progress. More recently, anti-protest laws have been passed in Tasmania, representing an overt burden on environmentalists (Gogarty 2014). Considering the slow economic growth of Tasmania, policies that affect the environment and environmental organisations can be justified through public good rhetoric associated with economic development and the generation of jobs.

The power of highly influential stakeholders in Tasmania can be traced to their statutory authority, their economic importance in terms of representing fisheries interests, or their lobbying capacity. While the hierarchy of influence and the main sources of power are obvious to most respondents, the social constructs behind them are not readily apparent. I argue that the historical contribution of the extraction of natural resources to the State's economy has contributed to the social importance attributed to fisheries. There are significant cultural roots that value a close relationship with nature, and the ability to provide food for yourself or your family. As fishing is an important part of the Australian identity (Franklin 1996), both commercial and recreational fishers have gained high social standing. Minnegal *et al.* (2003) explore the social constructs of commercial fishers who face threats to their practice from managers, recreational fishers and environmental organisations. These authors suggest that, in an effort to defend their occupation, fishers have reshaped their identity based on place, tradition and practice. Such constructions legitimise their practice, and allow them to draw on historical roots to defend their status. Apart from these situated constructions, there might be other non-obvious reasons for the importance of key industries, which can be tentatively linked to general constructs of modern societies. For example, the importance of some industries for the provision of jobs and economic revenue can be heightened by capitalist assumptions that connect human well-being to materialistic wealth (Kasser *et al.* 2004).

The use of evidence in a decision-making process is another aspect where embedded power structures have an influence. Juntti *et al.* (2009) explain that, in the dichotomy between expert and lay knowledge, the former has traditionally been dominant. In many cases, the superiority of scientific information is institutionalised and embedded in decision-making assumptions, so

the question of "what constitutes evidence?" is not critically assessed. Complex interactions between science as evidence, socio-economic factors and society premises result in high levels of uncertainty over causal links and outcomes of a given policy (Jasanoff 2003; Juntti *et al.* 2009). For this reason, political and normative views of the problem and possible solutions are now often included explicitly in decision-making processes. Scientists need to be involved in the conversation between different stakeholders, with different kinds of knowledge. As Macilwain (2016) remarks "We like to talk about 'engaging the public', but many scientists really just want to talk at them".

Taking into account the previous considerations, a participatory planning process needs to acknowledge embedded biases and power differences, in order to be inclusive and fair. A systematic analysis of stakeholders is a first step, but it should aim at identifying key stakeholders and at appraising the distribution and sources of power. Approaches to stakeholder analysis can vary substantially, based on the theoretical grounds; depending on the purpose of the analysis (identification of stakeholders, their categorisation or relationships between them), Reed *et al.* (2009) present a typology of the most common methods used. The classification of stakeholders according to their interests and legitimacy, however, can be highly subjective (Gass *et al.* 1997). In order to use stakeholder analysis as a tool to counterbalance power structures, the facilitating agency should not have an immediate interest in the issue. Characterisation of stakeholders should include levels of influence and participatory methods can be used to validate the results. Complementary analyses (e.g. institutional analysis or social impact analysis) can be used strategically to balance power inequalities (Kende-Robb and Van Wicklin III 2008). For example, understanding financial limitations of certain actors might require allocating transportation expenses in the budget, or limited skills of some sectors can involve capacity-building workshops.

The identification of key stakeholders by the leading or facilitating actor, however, is not devoid of problems, even if a systematic approach is used. This step was considered one the most difficult for the definition of the Tortugas Ecological Reserves in the Florida Keys, which aimed at forming a collaborative decision-making body (Living Oceans Society and World Wildlife Fund Canada 2005). A deficient selection of stakeholders can generate conflicts or exacerbate existing ones. Inappropriate representation is a common problem, where representatives do not reflect the position of their constituents, lack the authority to make decisions, or where several individuals/groups claim to be the legitimate representative (for a discussion on the legitimacy of representation see Parkinson 2003). For example, in the Race Rocks MPA planning process

in Canada, the leading agency established a multi-stakeholder advisory board, but it later became apparent that First Nations representatives on that board were not supported by all indigenous groups. The process was thus delayed, as they had to retrace some steps and start again with the appropriate representatives (Living Oceans Society and World Wildlife Fund Canada 2005).

Official representation also increases the chances of an organisation of exerting influence, as it provides a unified voice for a sector. This is particularly true when the groups are officially recognised by government. Furthermore, some organisations receive government financial support for their basic operations and for the provision of certain services or through specific projects. As found in this study, an on-going link of this kind with government gives more weight to those organisations. A sector with a well-structured organisation can exert more influence than sectors with conflicting, unstable or non-existent representative bodies. Usually, organisations that represent strong industries, have the necessary resources and skills, and are better organised as a sector to effectively lobby decision-makers (Gunderson and Holling 2002; Sklair 2002). In Tasmania, recreational divers are probably one of the least organised groups.

In summary, the distribution of power, social constructions of the importance of different stakeholders, unequal representation and organisational capacity all affect lobby capacity and influence over decision-making processes. These power structures affect inclusiveness, because influential actors have a better chance of having their views heard. The result in the case of the Bruny Bioregion was an unfair decision, with benefits skewed toward the powerful. If the powerful use covert strategies, such as lobbying, the process loses transparency. All these factors reduce faith in the process, compromising future participation in other processes, reducing legitimacy and ultimately affecting performance.

7.3 Polarisation

A schism between pro-development and pro-conservation interests in Tasmania has been evident for decades, and has been manifest, for example, through protests against hydroelectric dams, forestry and other development proposals (Baidya 1984; Sewell *et al.* 1989; Gale 2008; Krien 2010). The designation of MPAs, particularly in the Bruny Bioregion case, was associated with high levels of conflict between proponents of resource extraction and conservation. This is not surprising, considering that human activities are concentrated in

coastal waters. Designation of MPAs is subject to more controversy closer to the coast, particularly near populated centres (Edgar *et al.* 2000; Laffoley 2008; Toropova *et al.* 2010).

Polarisation of opinion in Tasmanian environmental debates can be based partly on the high stakes involved. Commercial fishers are dependent on the extraction of marine resources for their livelihoods. Many of these fishers might not have the necessary skills or financial ability to change their livelihood, as found by Marshall and Marshall (2007) in the north of Australia. The lifestyle and sense of freedom associated with fishing is not usually found in more traditional jobs, so changing jobs might result in a significant loss of identity for some people. This is an important reason for fishers to unite in the defence of their source of livelihood and their lifestyle (Minnegal *et al.* 2003; Hislop 2006). On the other hand, other stakeholders depend on high conservation status of marine resources. For example, dive operators need to have at their disposition dive sites that meet general diver expectations, such as viewing large animals, schools of fish, species richness and rare species (Williams and Polunin 2000). Apart from dedicated recreational fishing studies (Lyle and Morton 2004), there is little socio-economic or cultural information about the diving sector in Tasmania and their relation with marine conservation. However, studies in other places indicate that regular underwater contact with the marine environment engenders strong place attachment in divers (Moskwa 2012). Divers who derive a livelihood from this activity, such as researchers and dive operators, probably have the highest stakes. Other actors have strong feelings about the marine environment based on ethical or spiritual motivations. Thus, different actors have conflicting interests, based on different motivations, interests and values. Under certain circumstances, such differences can lead to a polarisation of opinion.

Both the media and politicians use debate to further their own interests, either to reach a wider audience or to build support for a specific policy. Manipulation of a debate increases the perception of polarisation and, in a vicious circle, it can increase polarisation. One interviewee in this study pointed out that the dominant political parties tend to do the opposite of whatever the Greens suggest, no matter how sensible the idea. A clear example in Tasmania was the unreasonable defence of the woodchip industry using old-growth forests. Signs in the global market clearly indicated that it was not viable to continue this practice, but the Labor Government at the time insisted on supporting the industry. When the most important company collapsed, politicians put the blame on environmentalists and the Greens (Krien 2010). In the case of MPAs in Tasmania, politicians might have used conflict to avoid taking actions that they did not fully support. In an analysis of the Tasmanian MPA process up to 2004, Hislop (2006)

suggested that the Government inertia could become behaviourally entrenched. In fact, ten years later, her prediction proved to be accurate, as subsequent Labor Governments made little progress on MPAs, and the current Liberal Government have explicitly stated that there will be no further progress on MPAs during their period in power.

Regardless of differences in opinion, results from this study suggest that those differences are not as marked as depicted in the media or in political discourses. While organisational representatives have varied views on MPAs, these tend not to be extreme, and most have indicated an understanding of the view of other sectors. Some of the most extreme views, both for and against MPAs, were held by scientists. This might seem surprising, considering that science is regarded as objective and independent, but in fact, scientists are not exempt from personal values and interests (Jasanoff 2003) or pressure from third-party interests (Lewandowsky and Bishop 2016). Even though participants in this study stand for the main organisations and bodies, they were not a statistically representative sample of each sector. For this reason, a statistically representative survey would be needed to analyse the differences between the positions of spokespersons and the rest of their constituency. This information would shed light on the level of polarisation in the community at large.

Perceived polarisation can also be partly an artefact of participatory processes. Participation is time consuming, and requires an effort to understand what is discussed and to construct arguments to defend a position. The majority of people will not be willing to sacrifice personal time to participate in a consultation process (Carpini *et al.* 2004). Most participants tend to be passionate enough about the issue to sacrifice their time; thus, extreme views are likely to be overrepresented (Fiorina *et al.* 2006). Token participatory processes exacerbate this tendency, and balanced positions might be mostly from those who are required to be there as part of their job.

Another problem associated with polarisation concerns the communication of arguments and supporting information. As a debate becomes public, the various parties select information that better justifies their views, sometimes exaggerating particular pieces of evidence. More balanced or conflicting information is ignored or refuted. Information perceived by the public is therefore oversimplified (Tumposky 2004), and sometimes wrong (Clark 2009). The complexity of environmental problems requires the collation of diverse sources of information, but simplified arguments are easier to remember.

Polarisation and its manipulation also make participatory processes more difficult, because individuals with extreme positions will tend to express their ideas without listening to others. Correspondingly, it becomes more difficult to make decisions, as there will always be a portion of the population strongly opposing any decision. Polarisation, however, is not necessarily an impediment for collaborative problem solving (Ansell and Gash 2008; Emerson *et al.* 2012; Roberts and Jones 2013; Laws *et al.* 2014). Ansell and Gash (2008) propose that collaborative processes are still viable if stakeholders are interdependent, and if collaboration is the exclusive forum of solving a problem. Meaningful face-to-face dialogue and consensus-oriented processes might need professional facilitation or mediation. Laws *et al.* (2014) analysed the stages of conflict and its escalation, and concluded by exploring how conflict could be turned into an opportunity for collaboration. They specifically argued that strong emotions and associated forceful positions were an important source of understanding of local issues; if appropriately harnessed, this passion could result in strong commitment to a process. They also explored how conflict could bring individuals together, increasing organisational capacity, which was in turn fundamental for cooperation.

7.4 Reduced trust

In Tasmania, trust in government organisations and decision makers is low. Many of those who participated in the Bruny Bioregion Inquiry, felt that the process had been a "fiasco" and that they had been "cheated". Under the prospect of new consultations, some respondents cynically asked "why bother?". Some feel that these procedures are just a formal requirement and that they serve to legitimise decisions that are not open to discussion. Most of the failures in governance quality discussed above affect trust in Government: token participatory processes, lack of transparency, and the disregard of evidence. Furthermore, many interviewees believe that politicians further their own interests, rather than the public good for which they are elected. A government bias towards larger and therefore more powerful economic interests is a problem that is not specific to Tasmania, but has been widely reported around the world (Juntti *et al.* 2009; Jones 2015; Agardy 2016; Chylarecki and Selva 2016). In Tasmania this problem is amplified, given that it is a small economy dependent on relatively few enterprises:

> Tasmania has a history of placing its eggs in one basket. Agriculture, then hydroelectricity, then forestry … When so much hope is placed in one industry, or one company, any criticism becomes a highly contentious and political act, polarising the community (Bibby 2013).

The history of Government bias or negligence in environmental debates, the thin line between politics and "mateship", and sometimes even "improper behaviour" (Krien 2010; Bibby 2013), have decreased trust in Government.

Apart from a reduced trust in Government, some respondents suggested a lack of trust in other stakeholders. For example, they had pre-conceptions about the unreliability of key actors in sectors other than their own, or felt that the official positions held by certain organisations were not honest. This is fuelled by conflicting interests and values, and the more passionate people are about them, the less open they are to different points of view. Manipulation of polarisation can increase these conflicts. A lack of opportunities for dialogue between opposing parties enhances pre-conceptions about the "others", and prevents learning about values, interests and needs of different sectors. Without such understanding, it is easier to dismiss points of view held by opponents without giving them fair consideration. Ansell and Gash (2008) point out that a history of conflict generates a vicious cycle of suspicion and stereotyping.

Reduced trust in Government and opposing sectors affects the willingness to participate in a collaborative approach to the conservation of the marine resources, and reduces the chances of success of any kind of cooperation. Nevertheless, as discussed above, reduced trust associated with polarisation is not necessarily an impediment to initiate a collaborative process. Collaboration can be seen as the last resort to resolve a long-lasting dispute (Sewell *et al.* 1989; Ansell and Gash 2008). The required trust can be built along the way, as a by-product of the process. A process can progress from less risky dynamics, such as coordination, to more demanding collaboration (see Chapter 2 and 6 for a discussion of costs and risks of different social dynamics). Several authors mention that small steps can help develop the trust and mutual understanding necessary to create shared meaning and goals, and eventually be scaled-up to more challenging initiatives (Living Oceans Society and World Wildlife Fund Canada 2005; Ansell and Gash 2008; Emerson *et al.* 2012). The Tasmanian forest conflict provides such an example; after years of open confrontation, the contenders decided to start conversations, and an incremental process resulted in the development of trust and the eventual signature of the Tasmanian Forest Agreement (Schirmer *et al.* 2016).

So far I have discussed the major challenges for the governance of MPAs in Tasmania. However, two major factors revealed by this study provide hope to the possibility of establishing a collaborative approach to marine resource management in Tasmania: the

existence of common ground across sectors; and power structures that can facilitate the search for common goals.

7.5 Common ground

The literature indicates that in order to have a successful collaborative process, among other factors, it is necessary to set a common goal (Robins *et al.* 2011). The establishment of an MPA system in Tasmania, as in other places, has been surrounded by controversy. Opinions about the effectiveness of MPAs for biodiversity conservation vary substantially. As the establishment of MPAs has been perceived as a goal in itself, it would be appropriate to conclude that there is currently no common ground between MPA supporters and opponents. Here I posit that if the problem is examined from a different perspective, such common ground might not be difficult to reach.

Questionnaire results show that representatives of all sectors have a strong connection with Tasmanian marine environments. Coupled with comments made during interviews, this indicates that there is a common interest in the conservation of marine resources. Different sectors and individuals, however, have different views about the impacts of different uses and about the best management options. For this reason, a participatory/collaborative process should start by analysing the issues and framing the problem. Several authors highlight the importance of developing shared meaning to enable a collaborative process (Innes and Booher 1999; Pahl-Wostl and Hare 2004; Ansell and Gash 2008; Robins *et al.* 2011; Emerson *et al.* 2012). For instance, Emerson *et al.* (2012) suggest that "principled engagement" and "shared motivation" enhance each other in an iterative process. "Principled engagement" refers to the discovery of shared interests and values, critical deliberation, the articulation of common purpose and the determination of key agreements. "Shared motivation" involves the development of trust, mutual understanding and a shared commitment to the process. In the case of marine conservation in Tasmania, it is possible that such process of developing shared meaning results in solutions that do not include MPAs.

Collaborative processes have provided the means for actors to realise that, even with a variety of conflicting interests, there are usually shared problems and solutions that can benefit more than one party. In an example in Lake Ontario in the United States, Schusler *et al.* (2003)

analysed the extent of social learning after a search conference.[22] These authors defined social learning as "learning that occurs when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action". In the Lake Ontario case, participants were surprised to learn that they shared many points of view with other actors, and among other things, reported learning about others' concerns, about different options of addressing the problems, and some even changed their views about the problem. Starting with small steps, such as finding common ground and developing shared meaning, social learning can be the base for more challenging initiatives.

7.6 Power structures that advance common interests

Results from this study indicate that the network of actors with an interest in marine issues is well connected. A highly connected network is predictable in a small place like Tasmania, where people tend to have few degrees of separation from any other person in the island. This "small-worldness"[23] is neither bad nor good; although it facilitates undue influence of unrepresentative lobby groups and other negative uses of power (Bibby 2013), it can also facilitate development of strong social capital and sense of community (Woolcock and Narayan 2000). A highly connected network can probably include social structures necessary for collaborative approaches.

A model of the network of information exchange between the main actors involved in MPAs or marine resource management in Tasmania revealed that several social structures and positions could enhance collaboration. The existence of closure (see Section 2.5 for an explanation on social structures) has been closely related to collaborative structures and to high levels of trust (Borgatti *et al.* 2009). In the Tasmanian case, the existence of closure structures or triangles, was higher than expected by chance. Although most of these structures refer to intra-sector triangles, the trusting nature of actors involved in such relationships provides the possibility of crossing bridges across sectors. This possibility is further increased when examining cross-sector stars or bridging links, which were found to be more prominent than expected by chance. Enqvist *et al.* (2014) posit that such connecting links between subgroups and across networks is crucial to build trust and reduce conflict. Nevertheless, the potential to use this structure to

[22] A search conference is a participatory method in which participants can find points of disagreement and common ground, with the purpose of developing a plan that they can support and help implement.
[23] Networks in which most nodes are connected to each other, either directly or through common nodes (Watts 1999).

advance a collective development of management alternatives depends on the motivation and leadership skills of the specific actors who hold those positions. As discussed in Chapter 6, power structures are not necessarily negative or positive. Such structures can help or impede collaboration depending on the interests of the powerholders, their commitment and the way in which they choose to wield, or not, their power.

The reduced number of links across sectors, on the other hand, can be related to the vicious cycle of polarisation, either perceived or real. In polarised communities, it is common that opposing parties view each other with suspicion, have limited communication with each other, and trust is thus reduced. The existent bridging links across sectors can probably be explained by the fact that organisation representatives tend to be more diplomatic, as they need to interact in different forums with all kinds of actors. Openness to different ideas and the capacity to debate in a respectful manner are fundamental requirements for collaborative initiatives.

Enqvist *et al.* (2014) mention that there are no "ideal" network configurations, but that certain structures can increase or prevent certain desirable traits for collective action. But there are important trade-offs to consider. Well-connected actors in a network can act as coordinators, and capitalise on the flow of resources and information (Cash *et al.* 2006; Borgatti *et al.* 2009); nevertheless, the energy and time to maintain social relationships and deal with information are not unlimited, and place a burden on those central actors. In a similar way, actors acting as brokers between two or more sectors, can take advantage of being an intermediary, but many times face tensions between different interests (Ferriani *et al.* 2009). Barnes *et al.* (2016) studied the relationships of three distinct ethnic networks in Hawaiian fisheries. They found that productivity of brokers was significantly lower, because they were distrusted by the different cliques and were denied key information. High centralisation can also have advantages and disadvantages. A highly centralised network is more efficient to share information; it can also increase external legitimacy, because one actor can represent the whole network. At the same time, the same network can result in less inclusiveness and internal legitimacy (Enqvist *et al.* 2014). Long *et al.* (2013) also explain how dense networks optimise information sharing, but impedes innovation, as ideas are homogenised; innovation is more probable in networks with structural holes, where new ideas can emerge in dissimilar groups.

In this way, coordination, brokerage and collaboration have associated costs and risks (Berardo and Scholz 2010; Robins *et al.* 2011; Barnes *et al.* 2016). But if cooperation can result in synergistic benefits, network members might be willing to assume the risk. To do so, members

need to trust that others will commit to their part of an agreement. If a minimal level of trust is not present, it has to be built, and building trust is a process that requires time and ongoing face-to-face contact. With this in mind, understanding a specific network is important to evaluate weaknesses and strengths, but the decision to engage in a collaborative approach depends on a series of variables already discussed (Ansell and Gash 2008). It is important to bear in mind that a collaborative process would result in changes in the existent relationships. Bridging organisations can initially serve as coordinators to bring together actors from different sectors. In processes that rely mainly on coordination, trust is less important than in collaboration. Collaboration involves more risks, because actors depend on each other to achieve results. Closure in a network, given by the presence of triangles and more complex social structures, is particularly important, because it reassures actors that there are "checks and balances" in the network (Berardo and Scholz 2010; Robins *et al.* 2011). As coordinated actions develop, more trust might be generated, which can eventually evolve into collaborative initiatives.

A final point is that policy design and accompanying participatory methods need to consider the nature of human behaviour. Fehr-Duda and Fehr (2016) uncover typical tendencies, which determine the success or failure of certain policies. For example, many people put the interest of the group first, but this behaviour is sustained only if they are assured others do the same; in this case, social norms can have an important effect. Most of the times, there are also "free riders", and these need to be "punished" in order to sustain cooperation. Long-term risk tolerance is relatively high, compared to immediate risks, affecting the viability of policies aimed at future problems.

7.7 Interrelations between themes

The different themes discussed do not have isolated effects. There is a complex set of relations between each of them, which I analyse in the matrix shown in Table 7.1. The matrix is directional, meaning that theme A can have an impact on theme B, and theme B can have a different effect on theme A.

The next and final chapter examines how each of the objectives was answered, indicates how this research contributes to the existing literature, and suggests further research needs. I finish with specific recommendations on ways to improve the governance of MPAs in Tasmania.

Table 7.1 Matrix showing relationships between main themes of the Tasmanian MPA governance system

		AFFECTED THEME								
INFLUENCING THEME ⇨		**Good governance criteria**				**Power structures that advance particular interests**	**Polarisation**	**Reduced trust**	**Common ground**	**Power structures that advance common interests**
		Inclusiveness and fairness	**Accountability and transparency**	**Legitimacy**	**Performance**					
Good governance criteria	**Inclusiveness and fairness**	-	An inclusive process can enhance information sharing, and transparency	Needed for stakeholder support	Can increase local empowerment to implement actions		Limited dialogue prevents solving conflicts and may exacerbate polarisation	Limited dialogue prevents developing trust relationships	Limited dialogue prevents finding common ground and shared meaning	
	Accountability and transparency		-	Needed for stakeholder credibility	Indirect - low credibility results in little motivation for implementation support					
	Legitimacy			-	Can generate necessary local support for implementation					
	Performance			Good performances gives credibility to the process	-					
Power structures that advance particular interests		Successful lobby effectively leaves out disempowered actors	Lobby meetings and results are usually not trackable	Lobby uses unofficial channels affecting statutory legitimacy	Indirect - less support from stakeholders affects implementation	-	Powerful actors tend to dominate the debate, taking the discussion out of the hands of the rest of the stakeholders and possibly increasing polarisation	Diminished inclusiveness, transparency and legitimacy reduces trust in government and in powerful actors	If powerful actors feel that they can obtain better results by lobbying decision makers, they might not participate in collaborative approaches to find common ground and work cooperatively	
				Stakeholders are aware of some lobby efforts, reducing credibility of decisions, and corresponding support						
		Embedded constructs determine "key" stakeholders. The	Embedded constructs inform special treatment of "key" stakeholders and							

	AFFECTED THEME								
INFLUENCING THEME ⇨	**Good governance criteria**				**Power structures that advance particular interests**	**Polarisation**	**Reduced trust**	**Common ground**	**Power structures that advance common interests**
	Inclusiveness and fairness	**Accountability and transparency**	**Legitimacy**	**Performance**					
	absence of a systematic stakeholder analysis gives advantage to more salient actors. This is true within government as well.	policy preferences. This social constructs are seldom openly acknowledged							
	Hierarchical structure of government tends to disregard the opinion of low level staff (on the ground)								
Polarisation	Discussions might reiterate extreme positions of salient actors, leaving out the views of some stakeholders	Information available to the public might become oversimplified and moulded to fit the position of opposing sides	Cynic view of any decision that is not 100% of what polarised actors expect	Contentious debate might deviate efforts from more constructive alternatives to solving problems, although in some circumstances it can force cooperation	It might enhance the position of the most salient actors in the debate	-	It might exacerbate prejudices about other actors, significantly affecting trust between actors involved in the debate.	Even if the majority of actors have issues in common, a polarised discussion will focus on the differences, rather than the similarities	Polarisation can reduce the viability of using collaboration or bridging structures. However, actors tired of long debates might eventually engage in collaborative initiatives
Reduced trust			Reduces the earned legitimacy of government	Less support from stakeholders affects implementation			-	More difficult to get together to initiate a collaborative approach that helps finding common ground between different actors	Collaboration structures across sectors are less likely to be sustained in time

	AFFECTED THEME								
INFLUENCING THEME ⇨	**Good governance criteria**				**Power structures that advance particular interests**	**Polarisation**	**Reduced trust**	**Common ground**	**Power structures that advance common interests**
	Inclusiveness and fairness	**Accountability and transparency**	**Legitimacy**	**Performance**					
Common ground			If common ground is found, shared meaning can be created for problem framing and solutions. Shared meaning can improve earned legitimacy of a process	More stakeholder support can improve implementation	Common ground can dissolve the need to push for particular interests	It can draw the attention from extreme views towards shared meanings	The process of finding shared meaning can generate new relationships that increase trust	-	It can give sense to engaging in a coordinated/cooperative initiative
Power structures to advance common interests	Have the potential of bringing together a range of different actors	Informal coordination/cooperation processes, especially if led by a non-government actor, risk insufficient transparency and accountability	High centralisation increases external legitimacy. Networks with high closure have less external legitimacy	Depends on the structures, motivation and performance of key actors, and on the evolution of the network		Bridging structures can connect dissimilar groups. Collaboration can help opponents develop shared meanings	Depends on many variables. It can generate trust across sectors, but the broker can also be seen with suspicion by both parties	Can facilitate the finding of common ground and the development of shared meaning	-

7.8 Significance of main findings

The ideas discussed throughout this chapter were drawn from the results of this study, but few are exclusive to the Tasmanian case study. Several of the examples used throughout this discussion illustrate the relevance of this thesis to the international efforts to improve MPA governance and to the governance literature. The following section highlights the significance of some of the most important ideas drawn from the Tasmanian experience for the broader conservation community and the literature. This section is the basis for recommendations of Section 8.4 for MPA governance elsewhere:

A limited vision of the usefulness and requirements of an MPA system reduces its value for marine conservation. If an MPA system is conceived only as a designation process, key features of MPA management are probably neglected, reducing possible longer-term benefits. Many authors highlight the need to focus efforts on ecological representation and effectiveness (e.g. McClanahan 1999; Agardy *et al*. 2003; Pomeroy *et al*. 2004; Hockings *et al*. 2006; Laffoley 2008; Barr and Possingham 2013; Edgar *et al*. 2014; Barnes 2015; Grech *et al*. 2015). Fewer authors emphasise the need to plan for implementation prior to, during and after the designation process. Such lack of planning is evident when neither the legal framework nor the long-term budgets provide for appropriate management, including staffing, education, stakeholder involvement, surveillance, monitoring of objectives and adaptive management of each area and the system. The findings of this study suggest that if MPAs are not continuously managed and monitored, managers might be unable to show benefits.

Marine ecosystems have both small and large-scale issues, as well as significant variability in space and time. If governance regimes do not take into consideration this complexity, MPAs can fail to provide expected results (Olsson *et al.* 2004; Armitage and Plummer 2010; Lockwood *et al.* 2012). Evidence of this problem includes a lack of coordination between authorities at different scales, poor integration of policies and rules across scales and limited structures to provide resilience to change. Findings of this thesis reinforce normative developments in the literature calling for better coordination across levels and sectors in the literature, and greater adaptability (Underdal 1980; UNDP 1997; McLeod and Leslie 2009; Lockwood 2010; Borrini-Feyerabend *et al*. 2012; Borrini-Feyerabend *et al*. 2013; Lockwood *et al*. 2013).

When participatory processes of establishing an MPA system do not carefully follow good governance principles, their results can be counter-productive. If participants feel their input is ignored, and that

their engagement is of a token nature, they will lose trust in the process and leading actors. Unequal participation and influence over decisions aggravate this problem. Consequently, stakeholders will likely distrust future participatory processes or decide not to participate at all. The importance of inclusiveness and fairness is highlighted in governance guidelines (UNDP 1997; European Commission 2001; Graham et al. 2003). Other authors provide more detailed theoretical development of these principles, including references to empirical examples (Chambers 1994; Reed 2008; Lockwood 2010; Lockwood et al. 2010; Borrini-Feyerabend et al. 2012; Borrini-Feyerabend et al. 2013). The case study explored in this thesis revealed some of the intricacies associated with implementing these principles. For example, open access to information might not be enough to involve all relevant stakeholders, as people have different skills and motivations to critically examine the information and argue their points of view. In this way, equal access to information does not necessarily result in an inclusive and fair process. Trade-offs between different principles might be also unavoidable. Making sure that all stakeholders have a fair opportunity to express their opinions and be considered might involve lengthy processes of stakeholder analysis, meaningful dialogue and collaborative problem solving. Following principles of inclusiveness and fairness might therefore substantially affect the efficiency of a process.

Trust is a key feature of governance, but is easily broken and hard to regain. This thesis demonstrates that trust is vulnerable to a variety of aspects of the governance regime. Apart from inconsequential participation, other issues can affect trust. Stakeholder support and ownership of a process is reduced if participation does not start from the beginning (Reed 2008). Results of this study clearly support this notion, indicating that participation should start by analysing the issues and deliberating upon possible solutions, rather than considering the solutions previously devised by government. Polarisation of opinion, perceived and real, reduces trust between different sectors (Ansell and Gash 2008). This was confirmed here by the attitude of contempt or distrust that some interviewees had towards those they perceived as holding opposing views to their own. Manipulation of the debate has been used on several occasions in Tasmania to further the interests of particular groups (Hislop 2006; Gale 2008; Krien 2010). Polarisation can be augmented by the media and the manipulation of information by highly visible actors. Lack of meaningful dialogue opportunities further divides opinions (Pahl-Wostl 2002; Ansell and Gash 2008). Results from this study suggest that different stakeholders in the Tasmanian case might be willing to learn about the reasons behind other actors' positions, if they had that opportunity. Another issue found in this analysis is that limited existence or use of evidence to support decisions also reduces trust in the process. By analysing the different aspects that have affected trust in the Tasmanian case study, this thesis contributes to the weight of evidence that

emphasises the critical importance of building stakeholders' trust in decision making and associated governance processes.

Power distribution is rarely uniform, and this study shows that ignoring distributional issues can exacerbate stakeholders' sense of unfairness, distrust and powerlessness. Power is sometimes used to maintain the status quo. Changing the distribution of power can be extremely difficult, not only due to the possible backlash by powerful actors, but because often the sense of powerlessness or dominance are underpinned by unconscious preconceptions (Schneider and Ingram 1993). One of the main contributions of this thesis to the governance literature is the further development of the role of power in decision-making situations. In particular, I was able to show that certain unconscious biases assign more credibility or validity to certain actors, and that such biases can pre-determine the results of a consultation process. On the other hand, in this study I portrayed power as neither bad nor good, but as an attribute of social relationships that can be used either to advance particular or common interests. Several studies highlight the importance of leadership, coordination and collaboration for fair and effective governance (Olsson et al. 2004; Charles 2007; Lockwood et al. 2012; Berkes and Ross 2013). Few of these authors, however, articulate the close relationship between these characteristics and power. In Section 7.6, I explained how power relationships are closely linked to these necessary attributes, particularly through social network structures and actors assumed or assigned roles. Such findings are of significance for case studies beyond Tasmania, in that they indicate the kinds of power dynamics that must be considered in the design and implementation of MPA designation processes.

Chapter 8 Towards better governance of MPAs: concluding remarks and recommendations

In this Chapter, I first indicate how the objectives of the study have been met. I also address the limitations arising from the focus of the study and the methods adopted. I then evaluate the ways in which this study contributes to the literature on natural resource governance, the significance of my findings and suggest future research needs. I finish by making specific proposals about ways to improve the quality of Tasmanian governance of MPAs and marine conservation in general.

8.1 How did the results answer the research objectives?

The aim of this thesis was to understand how MPA governance could be improved to enhance marine conservation in Tasmania. The specific objectives of this thesis were:

1. To analyse the core elements and context of the governance regime for Tasmanian MPAs.
2. To evaluate the extent that the Tasmanian MPA governance regime follows good governance principles.
3. To assess power dynamics in the Tasmanian MPA governance regime and how they have affected the quality of governance.
4. To make recommendations for improving the Tasmanian MPA governance regime.
5. To draw out lessons from the Tasmanian case study that can inform the design of MPA governance regimes elsewhere.

In Table 8.1, I summarise how the methods addressed each objective, the main findings and the limitations of the study. Limitations of the research were consequent on the scope of the thesis and the resources available to conduct the research, but did not undermine achieving the aim and meeting the associated objectives.

Table 8.1 Research objectives, methods, findings and limitations

Objectives	**Relevance of methods used, main findings and limitations**
1. To analyse the core elements and context of the governance regime of Tasmanian MPAs.	RELEVANCE OF METHODS It was possible to make a general characterisation of most elements of the governance regime through the review of key documents and selected questionnaire results. MAIN FINDINGS (Chapter 4) **Problems**: Tasmania is a climate change hot-spot, with synergistic impacts of climate

	change, invasive species, fishing and pollution. Research and monitoring are not appropriately funded, and there are significant information gaps and uncertainties. There are regime deficiencies to deal with change and for an integral approach to marine sustainability. **Instruments**: There are national and international tools that support the creation of MPA systems, but states are mostly autonomous regarding their jurisdictional waters. There is limited integration of policies across sectors or government levels. The Tasmanian MPA system is not ecologically representative, and there are important deficiencies in the governance regime. **Actors**: The main sectors include: elected government and bureaucracy, commercial and recreational fishers, conservation organisations, divers, research and tourism. Aboriginal interests were beyond the scope of this study. **Decision arenas**: There are no official, on-going forums to discuss MPAs or other marine conservation tools, other than to discuss fisheries-related issues. Consultation processes have been ad-hoc. **Socio-economic context**: Tasmania is characterised by a small economy, which has been strongly dependent on the extraction of marine resources. Activities that represent a short-term economic benefit are therefore prioritised in State politics. **Cultural context**: Tasmanian communities have a significant connection to the coast and the marine environment. Recreational fishing is an important activity, with approximately 98,000 fishers in 2013, giving them significant political leverage. **Political context**: Labor and Liberal parties have dominated the recent political arena in Tasmania. Labor's policies support MPAs under certain conditions, but progress in establishing an MPA system was slow. The Liberal party openly opposes the designation of new MPAs. The political system determines that decisions tend to be politicised, and ministers usually prioritise short-term results. **Natural context**: Tasmania is characterised by significant marine diversity and endemism. A high productivity has sustained valuable fisheries. LIMITATIONS The review of key documents and questionnaire results provided limited material on the following elements of the analytic framework: rules, incentives (both planned and unanticipated) and norms, and associated levels of compliance. Similarly, there is scant information about the dependence of key stakeholders on specific resources or livelihoods. There are a number of information gaps regarding the relations between natural dynamics, extraction levels, and other impacts. Some of these information gaps could be addressed through specific research projects (e.g. incentives), while other are related to insufficient monitoring and reporting of government agencies (e.g. compliance levels, effectiveness of MPAs). Aboriginal interests in marine issues and MPAs in particular were not covered in this thesis. The complexity of this issue deserves a dedicated study sanctioned by the Tasmanian Aboriginals.
2. To evaluate the extent to which the Tasmanian MPA governance regime follows good governance principles.	RELEVANCE OF METHODS Interviews were an appropriate method for exploring governance issues in depth, as perceived by the main stakeholders. The selection of interviewees proved to be effective, as they had relevant knowledge of the ecological and socio-economic aspects of the MPA governance regime. Although many were not experts on governance or planning, issues were treated with common sense and addressed critically.

	MAIN FINDINGS (Chapter 5) **Inclusiveness and fairness**: Consultation processes were considered inclusive, but some believed that engagement methods could be improved to increase rational dialogue across sectors. Final decision processes were perceived to have discounted some sectors and to be biased towards economic interests. **Accountability and transparency**: The consultation process was perceived to be transparent, but the legal framework and roles of different agencies should be clearer. Proposals were based on good ecological information, but did not consider socio-economic information. There are also many information gaps and a high level of uncertainty. Final decisions lack transparency. **Legitimacy**: The Government is generally accepted as the legitimate decision-maker, but there are low trust levels. Decisions are perceived to be insufficiently based on evidence. **Performance**: When final decisions can disregard recommendations from consultation processes without clear justification, it is perceived that funding and the efforts of participants are wasted. Direction, political leadership and coordination across sectors and across government levels are perceived to be poor. MPA management is underfunded and not adaptive. LIMITATIONS Views correspond to representatives of the main organisations involved in MPA governance. As such, results cannot be generalised for all stakeholders. The use of relatively open-ended questions in interviews provided an effective means of eliciting key issues. The disadvantage of this approach is that information about rarely mentioned issues might be insufficient to draw valid conclusions. The following good governance sub-criteria were not mentioned in detail, or not at all: authority by law; operational planning and management; responsible bodies answer for outcomes; subsidiarity; respect for different points of view and cultures; fair sharing of costs and benefits; and resilience. The scant mention of these matters does not necessarily mean that they are unimportant. Dedicated investigations would be needed to better understand these issues.
3. To assess power dynamics of the Tasmanian MPA governance regime and how they have affected the quality of governance.	RELEVANCE OF METHODS The mix of methods comprising social network analysis, interviews and media prominence analysis were complementary, providing both quantitative and qualitative information about power dynamics in Tasmania. To understand other dimensions of power dynamics, such as mobilisation of funds or success of specific proposals or vetos, I could have extended the methods used here or I could have used additional methods. This, however, would have required more dedication from key informants, or riskier exposure of sensitive issues, eventually hindering overall participation. I believe that the specific objectives, however, were satisfactorily covered by the methods used. MAIN FINDINGS (Chapter 6) **Ambivalence of power structures**: Power can have both negative and positive impacts on natural resource management. In many cases, power has been related to unfair decision processes, but power is a necessary feature of positive leadership, coordination and brokerage processes. **Distribution of influence**: Influence was concentrated in relatively few actors, mostly members of the commercial and recreational fishing sectors, some government agencies, and the relevant Minister.

	Polarisation: Perceived differences in opinion and existence of coalitions suggest higher levels of polarisation than results from interviews and the information exchange network. **Social structures for collaborative approaches**: An analysis of social structures in the information exchange network shows that there are opportunities for collaborative governance approaches, although across sectors relationships currently depend on a few bridging organisations. LIMITATIONS SNA comprises such a variety of methods and approaches to understanding networks, that there is always an opportunity to expand on the selected methods. First, SNA results are fixed in a particular period and context. In a more extended study this could be addressed by conducting a longitudinal analysis. Second, it is debatable whether choosing organisational ties over personal ties is preferable; it is undeniable that relationships depend significantly on personal contacts and attributes, but in a governance network certain relationships will exist regardless of who represents an organisation. Additionally, organisations possess collective resources that are often essential for maintaining relationships with key actors (Ernstson 2011). Third, networks can vary significantly depending on the kind of questions asked. In this study, I chose information exchange relations, assuming they did not require high levels of trust, and therefore could give me an idea of the viability of future collaborative approaches in what seemed a highly polarised political arena. Questions on collaboration links could have provided a better indication of trust relationships, but if I had focused on these stronger links, I might have overlooked key social structures for potential coordination/collaboration. A specific limitation I found when using the Hubs and Authorities procedure in the SNA was the limited usefulness of the "hubs" score. Ideally, this score would have showed which actors where more knowledgeable of the distribution of influence. When I ran the analysis, however, I found that some "hubs", rather than selecting "authorities" (influential actors) accurately, simply selected a large number of actors. This limitation prevented the identification of "knowledgeable" actors in the network. Power is a multi-faceted topic, and although this study covered enough aspects to meet the objectives, other approaches found in the literature could complement my findings (see Section 8.2).
4. To make recommendations to improve the governance regime. and 5. To draw out lessons from the Tasmanian case study that can inform the design of MPA governance regimes elsewhere and contribute to the academic literature.	MAIN FINDINGS (this Chapter) Using results from Chapters 4-6, and the general discussion of results in Chapter 7, I make recommendations for improvement both for the Tasmanian case (see Section 8.3) and recommendations applicable in other settings (see Section 8.4). LIMITATIONS Implementation of the recommendations from this study would require acceptance of findings amongst key actors, and commitment to change. I understand that change is not an easy undertaking; some organisations will be more reluctant to embark in a process that would not be a "quick-fix" to governance problems. The pathway to change is likely to involve an incremental process of collaborative co-production through trial, error, and adjustment.

8.2 Significance of this study

The process of establishing an MPA system in Tasmanian waters evolved from the ad hoc selection of some key ecological places in the early 1990s, to a more systematic decision-making process supported by policy and legal instruments in the early 2000s (Chapter 4). An encouraging first example in the Kent Group and Port Davey became a disaster in the Bruny Bioregion. Key actors in Tasmania have a good understanding of flaws in the governance regime, but this study systematises an important portion of that knowledge. From the perspective of good governance principles and the influence of power structures, this study analyses the different aspects that affected the governance of MPAs in Tasmania and that resulted in a grinding halt in further efforts since 2009. This thesis supports findings from other studies in Tasmania, related to the governance of both marine and terrestrial natural resources. These investigations raise questions about the appropriateness of the governance regime and the decision making process (Hislop 2006; Gale 2008; Lockwood *et al.* 2013; Clement *et al.* 2016). A better understanding of the faults in a governance regime provides a justification for change, and supports recommendations for building a more equitable, better-informed and suitable governance regime.

In a broader sense, this study provides an empirical contribution to the literature on governance of MPAs, and more generally of natural resources. Here I show a clear link between insufficient attention to key good governance principles and planning outcomes. In particular, a process that was originally conceived to be developed in the medium term was completely abandoned after evaluating three bioregions. This study supports the claims of several authors in the natural resource governance and environmental planning literature. For example, this study provides evidence for the need to conduct a stakeholder analysis (Reed 2008; Reed *et al.* 2009; Ban *et al.* 2013), to tailor engagement methods (Chambers 1994; Reed 2008; Lockwood *et al.* 2010) and to make participation meaningful (Arnstein 1969; Agrawal 2005; Keen *et al.* 2005; Charles 2007; Jones 2009). Several authors also support the importance of real dialogue opportunities to build trust and collaboration (Healey 2003; Ansell and Gash 2008; Reed 2008). Transparency in decision-making is important not only for ethical reasons, but for practical reasons (UNDP 1997; Lockwood 2010; Cinner *et al.* 2012b; Ban *et al.* 2013; Borrini-Feyerabend *et al.* 2013). Also, integrating different sources of knowledge to support decisions (Berkes and Folke 2002; Reed 2008; Berkes 2009; Armitage and Plummer 2010; Ban *et al.* 2013), and acknowledging uncertainty can help design more adaptive governance structures (Pahl-Wostl 2002; Berkes *et al.* 2003; Armitage and Plummer 2010; Lockwood *et al.* 2012). Coordination across governance levels and sectors was also highlighted by several authors as a key element of governance (Living Oceans Society and World Wildlife Fund Canada 2005; Pahl-Wostl 2006; McLeod and Leslie

2009). Effective implementation should be part of the original planning (Pomeroy *et al.* 2004; Alcala and Russ 2006; Charles 2007; Edgar *et al.* 2014). Finally, several authors also highlight the need to understand and balance power structures (Forester 1989; Healey 2003; Schneider *et al.* 2003; McCullum *et al.* 2004; Ansell and Gash 2008; Kende-Robb and Van Wicklin III 2008).

The impact of power structures on governance of natural resources has been highlighted by many authors in the natural resources governance literature. However, relatively few studies include specific methods to understand the distribution of power and its impact on decision-making processes. There are interesting empirical examples in the health literature (Muller and Headey 1996; Lewis and Considine 1999; Lewis 2006; Oliver *et al.* 2013), psychology (Neal and Neal 2011), and politics and local government (Mills 1956; Dahl 1961). There are fewer examples dealing with natural resource management (Muller and Headey 1996; Raik *et al.* 2008; Islam 2013) and particularly with marine and coastal resources (Crona and Bodin 2010; Njaya *et al.* 2011; Nayak *et al.* 2015). This study offers a methodological approach to understand one of several aspects of power, indicating that power structures affect decision-making processes and the quality of governance. Empirical information gained in this thesis supports theoretical developments that suggest the importance of taking into consideration power in governance studies (Forester 1989; Raik *et al.* 2008; Armitage *et al.* 2009; Neal and Neal 2011). Results also support a notion less developed in the literature, in which power is neither good nor bad (Jentoft 2005); instead, the consequences of existing power structures depend on the values, intentions and success of the powerholders.

This thesis also provides a strong foundation for future research. In particular, inquiries into the following topics would be helpful to gain a more complete picture of the MPA governance regime in Tasmania and the several aspects that affect the regime.

1. This study made an initial attempt at identifying key organisations with an interest in MPAs in Tasmania. Members of these organisations provided crucial information, but a representative sample would be needed to ascertain if the views from informants reflect those of the broad organisation, local communities and interest groups. A study focusing on values of the marine environment, concerns, expectations and opinions on marine conservation issues of different actors, would be essential for a comprehensive stakeholder analysis. Other relevant topics could include costs and benefits of alternative management options for different stakeholders, and the level of dependence on specific resources or livelihoods. A more focused study would be needed when dealing with particular MPAs or regions, as local organisations were not covered in this thesis. It is also important to consider that many interested individuals do not belong to formal groups, and this should be considered in a sample

of key actors and in a stakeholder analysis. There might be low profile and emergent interests and groups that were not evident at the time of designing this study, and these would need to be included. As already mentioned, Aboriginal interests warrant a dedicated study.

2. Diverse incentives play a key role in the conservation of natural resources. There are formal incentives, created on purpose to motivate individuals or collectives to follow good practice guidelines; these can be punishments (e.g. fines), or rewards (e.g. tax exemptions or funding of sustainability projects). Policies from non-conservation sectors or even conservation-focused legal instruments can create unexpected or "perverse" incentives (McNeely 1993; Lueck and Michael 2000; Jones *et al.* 2013). Some incentives rely on the voluntary application of standards, such as certification processes (e.g. Sustainable Fishing Council). Even more, some individuals might engage in good practices out of moral motivations, without the intervention of third parties. Social norms based on collective constructions of the environment can also play a key role. A comprehensive study on the use of incentives to improve the status of the marine environment would be useful.

3. This thesis focused on a relatively narrow aspect of power, and other approaches can increase the understanding of this key variable. For example, future studies can aim to answer key questions such as how and why different people respond to power manifestations (e.g. rewards, punishments, social norms, perceived integrity of the political class)? At what level do different people/organisations have influence in the following: initiating proposals; veto/approval stage of a proposal; the agenda setting stage of policy development; and the manipulation of people's points of view and perceived needs (creating/modifying social constructs). What is the role of the media and communications in exerting influence (intentional or unintentional) over society? One problem arises when trying to understand embedded structures or social constructs of power, as both the powerful and powerless are often unconscious of such structures. Another significant challenge for the understanding of power is that it is often exerted behind the scenes. Studying covert power depends on finding knowledgeable informants and "insiders" willing to participate.

4. Considering that SNA is a useful tool to study power structures, future studies could focus on a more in depth analysis of networks; rather than just looking at information exchange networks, more demanding or costly links like collaboration and trust could be explored. To account for the dynamic nature of social networks, an ideal study of networks, and their role in collective resource management initiatives, should be replicated on a regular basis to understand changes and trends. Considering that networks are usually nested, a combination of different scales of analysis can be appropriate, including individuals, organisations and different levels of action. Understanding how local, regional, national

and international networks interact is particularly important when addressing the fitness between ecological scale and governance regimes.

8.3 Recommendations

The following proposals are based both on the results of this study and the literature. To present recommendations in a concise manner, references are not included here, but can be found in previous chapters. Although two options are developed, these complementary rather than mutually exclusive. The first option refers to the use of existing attributes in the network of actors with an interest in marine conservation, and the creation of new ones. I call this option a collaborative approach, and it can be led either by government, or it can emerge from the bottom-up, through partnerships led by non-government actors. The second option involves a structural adjustment of the legal framework. Under the current circumstances, this legal change is unlikely, because for many years there has been little political will in State Government to advance in the conservation of marine ecosystems. If, however, a collaborative initiative is successful, enough Government support might be mobilised to consider formal institutional changes to improve governance. Such changes would benefit not just marine sustainability, but would improve governance of environmental planning in general. For each of the two options presented, I first briefly explain why it is needed, summarise the current conditions that could support implementation of the approach, and finally identify specific opportunities for improvement.

8.3.1 Collaborative approach

Why is it needed?

Polarisation and manipulation of conflict has resulted in limited trust across sectors. The well-grounded perception of unequal influence intensifies this lack of trust. As actors have not had enough opportunities to discuss their points of view, they have possibly not realised that they share several values and concerns. Most actors accept that the Tasmanian Government is the legitimate decision-maker, and this can be an obstacle to cooperative non-government initiatives to frame the problems and explore improvement options. Nevertheless, some of the attributes of current networks between actors might be useful. Additionally, a process initiated by non-government actors has a better chance of reducing the effect of electoral politics, which can open up opportunities to explore innovative solutions, rather than entrenching oppositional stances. At the moment, this seems like one of few options to advance governance of marine conservation.

Supportive conditions

- A well-connected network with social structures that facilitate cooperation within sectors and coordination across sectors.
- A relatively small population in Tasmania facilitates the existence of closely-knit and supportive communities, with an important level of volunteerism. This sense of community can facilitate rational and respectful relationships across sectors.
- Perceptions of the degree of polarisation between key interest groups appear to be exaggerated.
- Actors in all sectors manifested a strong attachment to Tasmanian marine environments. This can be a starting point to cooperatively analyse problems and explore solutions.
- Existing joint ventures between fishers and environmental NGOs show that, given a common purpose, different sectors can work together.
- FACs have provided dialogue opportunities between certain actors, building respect across sectors, even if they do not agree on many points.
- Some actors, particularly scientists, tend to be widely respected. Such actors can play a leading role in a collaborative initiative.

Opportunities for improvement

Bridging organisations as leaders. Brokers are in a unique position to facilitate dialogue among different actors. The success of a collaborative approach depends on: the perceived need of actors to initiate a dialogue on marine conservation; the willingness of key actors to assume the costs (time and effort) and risks (conflicting pressures) of a broker role; and their leadership skills to bring together actors with different interests and to focus discussions on finding shared meaning.

Nested structures. High endemism and diverse coastal systems in Tasmania require that both decisions and actions fit local circumstances. At the same time, many threats occur at larger scales, as is the case of climate change. Up to a certain point, a collaborative approach should be multi-level as well. It is impracticable to conduct a unified process that involves all coastal communities and interested parties. To maximise local participation, a nested structure of collaboration can move issues from the local to the State level and vice versa. Legitimate spokespersons for different communities and interest groups have a bridging role across levels. Agreement on actions needs to cross the different levels of governance, in order to mobilise the necessary support for

implementation at the local (e.g. compliance, volunteer groups) and State levels (e.g. funds, authority).

Inclusiveness. The process should involve all interested stakeholders, to increase the legitimacy of any outcomes. The decision on who should be involved must be discussed during initial meetings, to invite any group or individual that might have been overlooked. "Troublesome" individuals should not be excluded, but invited to share their views and interact with others in a respectful manner. Even if the process is initiated by non–government actors, relevant Government agencies and politicians should be invited to participate. While their involvement level might be low at the beginning, with time, a successful process might spark their interest. Government support will be needed eventually, if not from the beginning. It is also important to consider that different actors have unequal levels of representation; poorly represented actors should be encouraged to organise themselves, choosing a spokesperson to make participation more efficient. Sometimes exclusive forums are needed to solve particular issues; this can be justified on efficiency or practical grounds, but should be openly considered by all interested parties.

Power structures honestly acknowledged. Decisions in a collaborative approach might be less influenced by politics, especially if Government representatives are not leading the process. For this reason, a genuine interest in improving marine sustainability can reduce the role of power structures in shifting final decisions. Different actors, however, might still have different levels of influence during an open discussion. For example, individuals in higher levels of management, considered as experts, or with better education, might have an advantage articulating arguments and voicing their opinions. Different methods and tools need to be used to explore the ideas and points of view of less assertive or less skilled individuals; these include individual interviews, surveys, small-group discussions and professionally facilitated workshops. The variable capacity to cover the financial costs of participating can become an issue and funds need to be raised to give all actors the same opportunity to get involved.

Evidence-based discussions. Even if scientific evidence is devalued by decision-makers, most actors believe scientific information is the most reliable. A collaborative approach needs to bring to the table information from different sources, including socio-economic and cultural studies, but also information based on experience, beliefs and emotions. All actors need to agree from the beginning that any kind of information will be considered critically and respectfully. Actors need to acknowledge conflicting evidence, information gaps and uncertainties; a mechanism to resolve

conflicts and rank information can be helpful. The process might prioritise information needs to inform future decisions.

Process management and conflict resolution. Principles of relationship and ground rules, established by participants, might be necessary to ensure a meaningful exchange of ideas and the continuity of the process. Nevertheless, a certain degree of flexibility is necessary to face unexpected events. A method of accountability can be established to monitor commitments and progress. Given the diversity of interests, conflicts are bound to emerge so a system of conflict resolution is advisable.

Face-to-face dialogue. This is necessary to build personal relationships that can increase trust between actors and generate mutual understanding and shared meaning. It is important to bear in mind that there will always be extremists who will not change their position by any means. As long as participants agree on basic rules of respect and constructive discussion, such extreme positions should not prevent a consensus-oriented dialogue. Face-to-face dialogue can be complemented with less expensive methods of engagement, such as online forums, and surveys.

Taking advantage of different venues. Participation is a highly demanding activity. A small proportion of people are willing or capable of meeting that burden, especially over a long period. Organising side-events during popular events, and exploring alternative exchange methods to complement face-to-face dialogue might increase participation levels.

Adaptive management approach. The process should acknowledge that some decisions might be suboptimal. Experimentation, setting indicators, monitoring, and rethinking of actions and priorities according to new information should be on the table from the beginning.

Building on common ground. An attachment to Tasmanian marine environments and a related interest in their sustainability is shared across different sectors. This is a starting point for building shared meaning, including problem framing, a collaborative consideration of possible solutions and implementation of actions. Although MPAs have many benefits, discussions do not need to be centred on them. Different alternatives for the sustainable management of marine resources can have important advantages, including ecosystem-based management of fisheries, integrated coastal management, and MSP. Politicians and other decision-makers are more likely to support solutions that are backed by several sectors and that generate less controversy.

Eventual institutionalisation. A collaborative approach can generate necessary conditions for more formal actions. The forums and their decisions need to be eventually institutionalised, even if that occurs in the long-term. If not, compliance of agreements can become an issue, as non-government actors lack the authority to enforce agreements. Trust building processes usually require time, and if it stops halfway, outcomes might be lost. If the formalisation of the process is not ensured in the long-term, then collaboration can be compromised by fluctuating political will.

8.3.2 Regulatory reform

Why is it needed?

As previously discussed, participatory processes in Tasmania have shortcomings, particularly: non-systematic selection of key stakeholders; non-tailored methods of engagement; consultations that do not start from the beginning of processes (framing of problems and exploration of possible solutions); limited on-going dialogue opportunities; and an unclear legal framework. The decision process has fundamental flaws: only one person holds the power over the final decision; that person can disregard outcomes from consultation processes; this can eliminate the objectivity, inclusiveness and transparency that consultation processes intend to secure. Running a consultation that is not reflected in final decisions not only wastes time and money, but it also increases distrust in politicians and the system, reducing the legitimacy of decisions. Limited leadership and political will also have consequences for the implementation of individual MPAs, with inadequate planning, funding and monitoring of effectiveness.

Supportive conditions

Despite the flaws in the decision-making problem, there are a number of positive points that provide scaffolding for a more appropriate governance regime:

- General recognition of Government as the legitimate decision-maker.
- The TPC is mostly seen as an independent and thorough body, appropriate to mediate planning processes.
- Open and transparent consultation processes.
- The *Tasmanian Government Framework for Community Engagement* provides guidance on public participation purposes, principles and methods.

- Marine science in Tasmania is recognised for their quality, providing a wealth of information that can support decisions; information sources include citizen science programs like Redmap and Reef Life Survey.
- Science and systematic planning have been incorporated in policy and management tools, for example the TMPAS, the *Natural Heritage Strategy*, the *Natural Values Atlas* and the PWS *Monitoring and Reporting System*.

Opportunities for improvement

Envision implementation and monitoring. Planning processes often extend beyond the original timeframes, particularly when conflicts cannot be easily resolved. Appropriate funds need to be secured to cover such eventuality. Additionally, resources should be available to implement, monitor and adjust action plans. The development, implementation and periodic adjustment of management plans for all MPAs should be compulsory shortly after designation.

Clarifying the legal MPA framework. Both responsibilities and powers of each Government agency should be clearly discernible. When two or more agencies need to share a responsibility, a clear coordination mechanism should be in place. This would prevent agencies from blaming each other for lack of action, or from preventing another of initiating actions. In particular, MPA responsibility should not be split between PWS, different branches of DPIPWE and the Police, without a clear coordination system.

Look beyond the basic formal procedures of public involvement. Consultation steps already established by law (Figure 4.2) aim to inform and consult the public. At present, those steps are too general to account for differences in the issues at hand, or the characteristics of particular regions. Key elements of participatory processes are missing, such as stakeholder analysis, meaningful dialogue opportunities or consensus-oriented decision processes.

Institutionalise the *Tasmanian Government Framework for Community Engagement*. This framework is a relevant guide for more tailored and meaningful participation, providing enough flexibility to adjust the process according to specific conditions. The implementation of this framework is currently voluntary, and depends on the willingness of bureaucrats to engage the community. In order to be applied more widely, the framework should be institutionalised, either incorporating its prescriptions into planning laws, or closely monitoring and encouraging its application. As much as practicable, the views of participants should be reflected in final decisions.

Start from the beginning. Actors perceive the marine environment, associated problems and possible solutions in different ways. During consultation processes, government bodies usually identify problems, gather relevant information and develop preliminary proposals. Starting a consultation with pre-conceived proposals, however, can alienate some actors. It is recommended that engagement processes start by exploring different ways of seeing the issues, framing the problem and discussing possible solutions. In the case of marine conservation, tools other than MPAs can be as effective for controlling pressures and increasing ecosystem resilience, and these should complement an MPA system. An engagement process therefore should not be solely focused on MPA designation, but on identifying the problems that affect the marine environment and devising possible solutions.

Face-to-face ongoing dialogue. A regular forum to discuss marine conservation in an integral way should be established. Most problems are not isolated in time or space, so it is appropriate to consider them at regular intervals. The scope, principles of engagement, and decision-rules of that forum should be clearly established at the beginning, to avoid false expectations. The role of stakeholders (information recipients, advisors or co-managers) should also be clear.

Acknowledge and balance power structures. Leading agencies need to analyse existing power structures, including preconceptions, stakeholder hierarchies and levels of influence; this information should be used to rectify biases and to ensure equal participation opportunities. Analysis of evidence needs to cover ecological, socio-economic and cultural aspects, and use a variety of sources of information. When dealing with sensitive issues, pro-active steps need to be taken to deal with conflict before polarisation escalates to a political or media level. It is also important to distinguish between vocal individuals and legitimate sector representatives.

Overseeing final decisions. The legal framework should be amended to give the responsibility of a final decision to Parliament or at least to a body representing relevant sectors, rather than an individual with a direct interest in electoral results. If a body is formed, it should aim at unanimity, but if consensus cannot be reached, a decision rule should be clear from the beginning. If the final decision is different from the TPC's recommendations, the decision-making individual/body also needs to clearly explain why; the consequences of a different decision should be analysed, and mitigating actions implemented.

Integrated marine planning. Marine conservation is not only about MPAs, but about actions needed to minimise cumulative effects of diverse threats. Multiple aspects of marine sustainability should be

assessed jointly to account for synergistic effects: fisheries, biodiversity conservation, coastal management, pollution, invasive species and climate change. Marine Spatial Planning has been proposed as a cyclic process of planning, implementation, monitoring and adaptation (Ehler *et al.* 2009). New or adjusted legislation is usually needed to undertake MSP. In Tasmania, this new/adjusted legislation could either create a specific authority to coordinate the planning process across sectors, or give powers to the TPC to lead such an ongoing process. A change in legislation is also needed to facilitate implementation by existing agencies. Stakeholders could participate either as advisors or as co-managers. This process is not a replacement of existing management of fisheries or MPAs, but an overarching tool to ensure integration of marine management.

Consider real co-management. Co-management can increase the commitment of relevant actors, and improve decision-making processes. It is particularly important to deal with changing conditions in Tasmania in an adaptive way. While FACs are supposed to be "part of the [fisheries] co-management framework …" (Department of Primary Industries Parks Water and Environment 2015), they are only advisory bodies. More power also increases the responsibilities of stakeholders, and can result in more motivation to improve the sustainability of management decisions. This empowerment is relevant for the integrated marine planning body. Membership and procedures of this body can be determined through a participatory development. It should aim to have an equal representation of interests.

Nested structures of advice/decision-making. As discussed above under "nested structures" for a collaborative approach, a nested structure is appropriate to deal with multi-scalar problems. An integrated marine planning body at the State level should work in coordination with Australian initiatives, as well as bodies that represent local interests.

8.4 General recommendations for MPA governance

The following recommendations are drawn from the lessons learned in the Tasmanian case study, developed in Section 7.8. These recommendations are relevant to different settings, and contribute to international MPA governance. For ease of reading, I do not include citations, as all concepts have been previously discussed with reference to the relevant literature.

- Considering that several MPA benefits occur in the long term, an MPA system must be envisioned in the long term, well past the designation process. In this way, long-term

management actions can be prioritised and financed, to ensure the fulfilment of objectives and the social and financial sustainability of each MPA and the system.

- Local, regional, national and international scales of impact and action need to be considered to ensure proper integration of governance scales. Good integration can improve stakeholder and institutional support at relevant levels, thus increasing MPA effectiveness.

- Participatory processes need to follow good governance principles, including inclusiveness, fairness, transparency, accountability, legitimacy and performance. Particularly, stakeholders need to trust that their input is considered and if possible included in final decisions. Good governance principles improve trust in the process and in responsible agencies.

- A participatory process should start as early as possible, by considering with stakeholders the issues at hand and possible solutions. When stakeholders have a chance to participate early on, alternative management options can be considered, and are often more innovative and appropriate to the particular setting. Ownership and commitment of stakeholders are also more likely to increase. If the process involves a meaningful dialogue, trust across sectors can improve, reducing thus the negative consequences of polarisation and information manipulation.

- A good evidence base, scientific and socio-economic, can increase trust in the process. Stakeholders can be involved in the collection of information, and the generation of new information to support decisions. Facilitating agencies need to be perceived as objective and meticulous in the management of information.

- Participatory processes need to be designed to fit each case. Different stakeholders have different requirements and skills, which affect their capacity to participate effectively. Dissemination of information needs to account for such differences. In the same way, an unequal distribution of power can affect the results of a process and its legitimacy, so they need to be considered in any process.

- Understanding informal networks can help identify key social structures and roles, or their absence. With this information, it is possible to take advantage, or intervene to improve, structures that facilitate coordination and collaboration across sectors. The identification of actors that can act as bridges or collaborative relationships across sectors can be useful in the establishment of governance alliances.

- Formal authorities and rules need to be clear to increase commitment of specific agencies and effectiveness of management actions. These authorities need to have the necessary financial and political support to accomplish their responsibilities.

- Governance regimes, authorities and relevant stakeholders need to take an adaptive approach to governance, to be able to accommodate change. An adaptive management of MPAs, can help to monitor clear objectives and inform new actions to ensure MPAs effectiveness.

8.5 Conclusion

Marine environments around the world are facing increasing threats, leading to deterioration of ecological health and diminishment of key resources. Several strategies have been devised to improve the sustainable management and conservation of the oceans. MPAs are considered one of the most important tools for the conservation of biodiversity. In order to provide potential ecosystem benefits, MPA systems and complementary initiatives need to be effective. Effectiveness in turn is dependent on several factors such as: designation of MPAs based on sound ecological information; proper strategic and operational management; appropriate capacity at the site and system level; good communication strategies; basic and ongoing generation of knowledge that supports monitoring and adaptive management; and an appropriate governance regime (Worboys *et al.* 2015). While governance is just one of the several variables needed for successful MPAs, it can affect all other factors. Results from this study provide empirical data that support that notion. In particular, disregarding good governance principles can make a considerable difference in the establishment and implementation of MPAs, and marine conservation in general. A purposeful study of power demonstrates that these structures can have important effects on governance. Power, however, is an important feature of human societies, which makes living in groups possible. Leadership, cooperation and coordination are only enabled through specific power structures. If well used, these structures can result in benefits for the public good. This study shows that in Tasmania, power has had a negative impact on governance quality, but at the same time, there are social structures that give hope for a more collaborative approach to marine conservation in the future. While governance is only one of many important factors in MPA effectiveness, this study empirically demonstrates the importance of the quality of governance and of power structures. Findings and recommendations in this thesis can substantially enhance future initiatives for the conservation of the marine environments in Tasmania and further afield.

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Appendix 1. Information sheets and consent form for participants

Questionnaire information sheet

Invitation

This study is investigating the extent and quality of stakeholder participation in decisions regarding the designation and management of marine protected areas (MPAs) in Tasmania. It does not include commonwealth MPAs. The study is being undertaken by Dr. Michael Lockwood (Senior Lecturer, Geography and Environmental Studies), Dr. Lorne Kriwoken (Senior Lecturer, Geography and Environmental Studies), and Carolina García (PhD candidate, Geography and Environmental Studies). The study forms part of the PhD requirements for Carolina García.

What is the purpose of this study?

(a) To evaluate stakeholder perceptions of the extent and quality of participation opportunities regarding MPA decisions in Tasmania.
(b) To understand how stakeholders and government organisations influence MPA decisions in Tasmania.
(c) To make recommendations to improve the decision making processes for designation and management of MPAs in Tasmania.

Why have I been invited to participate?

You are invited to participate in this study because your organisation has an important role to play in the designation, management and/or performance of MPAs. Your participation in the research is voluntary and there are no consequences if you decide not to participate.

What will I be asked to do?

A link to the survey is attached to the email invitation. Participation in this study involves completing the on-line survey, which will take approximately 30 minutes. Responses will be anonymous and you will not be identifiable in any publications arising from the study. By submitting your responses, you are consenting to participate in the study.

Are there any possible benefits from participation in this study?

The information from the survey will be used to improve understanding of the extent of participation and consideration of stakeholders' opinions regarding the designation and management of MPAs. The survey results will be communicated to stakeholders and decision makers. As a stakeholder, you can potentially benefit from any associated improvements to stakeholder participation processes.

Are there any possible risks from participation in this study?

There are no risks associated with participating in the survey. All responses are anonymous, and information will not be used to your disadvantage. Only members of the research team will have access to the data.

What if I change my mind during or after the study?

If you decide to discontinue participation during the completion of the online survey, you may do so without providing an explanation.

What will happen to the information when this study is over?

The survey data will be anonymous, and will be stored for 5 years after the conclusion of the project on a password protected computer at the University of Tasmania. After this time, the data will be erased.

How will the results of the study be published?

The results of the study will be published in a number of formats, including a report to stakeholders, a PhD thesis and papers in academic journals. All information will be treated in a confidential manner, and you will not be identifiable in any publication arising out of the research.

What if I have questions about this study?

If you would like to discuss any aspect of this study please feel free to send an email to Carolina.García@utas.edu.au (preferably), or contact Dr Michael Lockwood on 6226 2834. Either of us would be happy to discuss any aspect of the research with you.

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number H0014037.

Please print this information sheet for future reference. To consent to participate in this research please complete the online survey.

Interview information sheet

Invitation

This study is investigating the extent and quality of stakeholder participation in decisions regarding the designation and management of marine protected areas (MPAs) in Tasmania. It does not include commonwealth MPAs. The study is being undertaken by Dr. Michael Lockwood (Senior Lecturer, Geography and Environmental Studies), Dr. Lorne Kriwoken (Senior Lecturer, Geography and Environmental Studies), and Carolina García (PhD candidate, Geography and Environmental Studies). The study forms part of the PhD requirements for Carolina García.

What is the purpose of this study?

(a) To evaluate stakeholder perceptions of the extent and quality of participation opportunities regarding MPA decisions in Tasmania.
(b) To understand how stakeholders and government organisations influence MPA decisions in Tasmania.
(c) To make recommendations to improve the decision making processes for designation and management of MPAs in Tasmania.

Why have I been invited to participate?

You are invited to participate in this study because your organisation has an important role to play in the designation, management and/or performance of MPAs. Your participation in the research is voluntary and there are no consequences if you decide not to participate.

What will I be asked to do?

If you chose to participate, Carolina will arrange a suitable time and place for an interview. At the interview, Carolina will ask you questions on stakeholder participation in the designation and management of Tasmanian MPAs. Interviews will last a maximum of one hour. A recording will be used to develop a transcript of the interview. You will have an opportunity to make changes to this transcript if you wish.

Are there any possible benefits from participation in this study?

The information from the study will be used to improve understanding of the extent of participation and consideration of stakeholders' opinions regarding the designation and management of MPAs. The study results will be communicated to stakeholders and decision makers. As a stakeholder, you can potentially benefit from any associated improvements to stakeholder participation processes.

Are there any possible risks from participation in this study?

There are no risks associated with participating in the interview. Information will not be used to your disadvantage. Only members of the research team will have access to the data.

What if I change my mind during or after the study?

If you decide to discontinue participation, you may do so at any time without providing an explanation.

What will happen to the information when this study is over?

Your identity will not be connected with the information that you provide. The data will be stored for 5 years after the conclusion of the project on a password protected computer at the University of Tasmania. After this time, the data will be erased or shredded.

How will the results of the study be published?

The results of the study will be published in a number of formats, including a report to stakeholders, a PhD thesis and papers in academic journals. All information will be treated in a confidential manner, and you will not be identifiable in any publication arising out of the research.

What if I have questions about this study?

If you would like to discuss any aspect of this study please feel free to email Carolina García - cgarcia@utas.edu.au, or contact Dr Michael Lockwood on 6226 2834. Either of us would be happy to discuss any aspect of the research with you.

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number H0014037.

Please print this information sheet for future reference. To consent to participate in this research please sign the consent form before the interview.

Consent form for interview participants

1. I agree to take part in the research study named above.
2. I have read and understood the Information Sheet for this study.
3. The nature and possible effects of the study have been explained to me.
4. I understand that the study involves participating in a one-hour semi-structured interview at my place of work or other nominated location. I understand this interview will be audio-recorded.
5. I understand that participation involves no foreseeable risks.
6. I understand that all research data will be de-identified and securely stored on the University of Tasmania premises for five years from the publication of the study results, and will then be destroyed.
7. Any questions that I have asked have been answered to my satisfaction.
8. I understand that the researcher(s) will maintain confidentiality and that any information I supply to the researcher(s) will be used only for the purposes of the research.
9. I understand that the results of the study will be published so that I cannot be identified as a participant unless I subsequently agree in writing to be identified as a participant in the publication of the study results.
10. I understand that my participation is voluntary and that I may withdraw at any time without any effect.

    If I so wish, I may request that any data I have supplied be withdrawn from the research.

Participant's name:

_____

Participant's signature:

_____

Date: _____

Statement by Investigator

☐ I have explained the project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

If the Investigator has not had an opportunity to talk to participants prior to them participating, the following must be ticked.

☐ The participant has received the Information Sheet where my details have been provided so participants have had the opportunity to contact me prior to consenting to participate in this project.

Investigator's name:

_____

Investigator's signature:

_____

Date: _____

Appendix 2. Questionnaire

Stakeholder participation in Tasmanian marine protected area (MPA) decisions: A survey of your views

This study is investigating the extent and quality of stakeholder participation in decisions regarding the designation and management of marine protected areas (MPAs) in Tasmania.

The study is being undertaken by Dr. Michael Lockwood (Senior Lecturer, Geography and Environmental Studies), Dr. Lorne Kriwoken (Senior Lecturer, Geography and Environmental Studies), and Carolina García (PhD candidate, Geography and Environmental Studies). The study forms part of the PhD requirements for Carolina García.

The purpose of this study is to:

(a) To evaluate stakeholder perceptions of the extent and quality of participation opportunities regarding marine protected area (MPA) decisions in Tasmania.
(b) To understand how stakeholders and government organisations influence MPA decisions in Tasmania.
(c) To make recommendations to improve the decision-making processes for designation and management of MPAs in Tasmania.

You have been invited to participate in this study because your organisation has an important role to play in the designation, management and/or performance of MPAs.

Your participation in the research is voluntary and there are no consequences if you decide not to participate.

More details are given on the Information Sheet that was attached to the email invitation.

Your participation in this study involves completing the following series of questions, which will take approximately 30 minutes. Responses will be anonymous and you will not be identifiable in any publications arising from the study. By submitting your responses, you are consenting to participate in the study.

A. First, we would like to understand your experience with and values for the marine environment and marine protected areas (MPAs) in Tasmania.

1. What activities link you to the marine environment and to what degree? *Please choose one answer for each activity.*

How often do you usually engage in this activity?	**Almost every day**	**At least once a week**	**At least once a month**	**At least once a year**	**Less than once a year**	**Never**
Commercial fishing	☐	☐	☐	☐	☐	☐
Marine farming	☐	☐	☐	☐	☐	☐
Work with a government agency involved in marine issues	☐	☐	☐	☐	☐	☐
Work with a non-governmental agency involved in marine issues	☐	☐	☐	☐	☐	☐
Marine-related research	☐	☐	☐	☐	☐	☐
Providing education/communication about marine issues	☐	☐	☐	☐	☐	☐
Coastal or marine care volunteering	☐	☐	☐	☐	☐	☐
Recreational no-take diving/snorkelling	☐	☐	☐	☐	☐	☐
Recreational fishing (nets, pots, handline fishing, spearfishing, diving for seafood)	☐	☐	☐	☐	☐	☐
Surfing, kayaking, sailing, windsurfing, kitesurfing	☐	☐	☐	☐	☐	☐
Boating, jet skiing, water skiing	☐	☐	☐	☐	☐	☐

Other (please list) _____

2. In your opinion, do MPAs affect the following activities positively or negatively? *Please choose one answer in each row.*

How is each activity affected by MPAs?	**MPAs have mostly negative effects**	**More negative effects than positive effects**	**Overall, MPAs have no effect**	**More positive effects than negative effects**	**MPAs have mostly positive effects**	**I don't know**
Commercial fishing	☐	☐	☐	☐	☐	☐
Marine farming	☐	☐	☐	☐	☐	☐
Recreational no-take diving/snorkelling	☐	☐	☐	☐	☐	☐
Recreational fishing (nets, pots, handline fishing, spearfishing, diving for seafood)	☐	☐	☐	☐	☐	☐
Education and/or research	☐	☐	☐	☐	☐	☐
Surfing, kayaking, sailing, windsurfing, kitesurfing	☐	☐	☐	☐	☐	☐
Boating, jet skiing, water skiing	☐	☐	☐	☐	☐	☐

Would you like to explain in more detail how MPAs affect specific activities?

_____

3. Next, we are interested in your level of attachment to the Tasmanian marine environment. *Please choose one answer in each row*.

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
I identify strongly with Tasmania's marine environments	1	2	3	4	5
I am very attached to Tasmania's marine environments	1	2	3	4	5
Tasmania's marine environments mean a lot to me	1	2	3	4	5
Tasmania's marine environments are the best places for doing what I like to do	1	2	3	4	5
My livelihood depends on Tasmania's marine environments	1	2	3	4	5
Fishing and obtaining seafood from Tasmania's marine environments is an important part of my life	1	2	3	4	5
Recreation in Tasmania's marine environments is an important part of my life					

Are there particular MPAs in Tasmania to which you feel strongly attached? If yes, please name them

_____

4. We would like to understand why different stakeholders might value **MPAs in Tasmania**. Please indicate how important each of the following values is to you. *Please choose one answer in each row.*

MPA values	Not important at all	Not very important	Somewhat important	Very important	Extremely important	I don't know
Economic benefits (direct jobs in conservation/tourism, direct and indirect tourism services-transport, accommodation)	1	2	3	4	5	6
Recreational opportunities(diving, kayaking, sailing)	1	2	3	4	5	6
Maintenance of ecosystem functions (trophic interactions nutrient cycling, water quality)	1	2	3	4	5	6
Conservation of biological diversity	1	2	3	4	5	6
Research and education	1	2	3	4	5	6
Sense of personal well being	1	2	3	4	5	6
Future generations (allowing others in the future to enjoy the above values)	1	2	3	4	5	6

Do you value other aspects of MPAs not included in this list? _____

B. In this section, we would like to explore your attitudes to MPA regulations, and your perceptions about MPA management.

5. The following items relate to your attitudes towards MPA regulations. *Please choose one answer in each row.*

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**I don't know**
Governments have a legitimate role in regulating the use of MPAs	1	2	3	4	5	6
Most people obey regulations that are in the interest of the community, even if they personally affect them in a negative way	1	2	3	4	5	6
Regulations are effective only if people understand their purpose	1	2	3	4	5	6
People are more likely to obey regulations if they have participated in their design	1	2	3	4	5	6
Regulations are only effective if there is a high risk of incurring penalties for non-compliance	1	2	3	4	5	6
Most people obey regulations when there is social pressure to do so	1	2	3	4	5	6
Current regulations are sufficient to fulfil the objectives of each MPA	1	2	3	4	5	6

6. Next, we are interested in your knowledge of the MPA system in Tasmania. *Please choose one option for each MPA. Note that it is fine if you have little or no knowledge of any of the MPAs listed.*

How much you do know about the location, rules and objectives of the following MPAs?	**I haven't heard about this MPA**	**I have heard about it, but I don't know much about its location, rules or objectives**	**I know roughly where it is, and have a general idea about its rules and objectives**	**I know where it is, and I am familiar with its rules and objectives**
Governor Island Marine Nature Reserve	1	2	3	4
Kent Group Marine Nature Reserve	1	2	3	4
Macquarie Island Marine Reserve	1	2	3	4
Maria Island Marine Nature Reserve	1	2	3	4
Ninepin Point Marine Nature Reserve	1	2	3	4
Port Davey Marine Nature Reserve	1	2	3	4
Tinderbox Marine Nature Reserve	1	2	3	4
South Arm Marine Conservation Area	1	2	3	4
Monk Bay Marine Conservation Area	1	2	3	4
Cloudy Bay Lagoon Marine Conservation Area	1	2	3	4
Opossum Bay Marine Conservation Area	1	2	3	4
Hippolyte Rocks Marine Conservation Area	1	2	3	4

7. We are now interested in your understanding of the institutional, socio-economic and environmental settings of MPAs in Tasmania. Please state the level of agreement or disagreement with the following statements. *Please choose one answer in each row.*

	Strongly disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**	**I don't know**
I understand the role of each government organisation (Parks and Wildlife, Marine Resources, Marine Police, Planning Commission, Ministers) regarding MPAs	1	2	3	4	5	6
I understand the reasons behind each MPA designation and their regulations	1	2	3	4	5	6
I know the mechanisms by which my opinions can be considered by decision makers responsible for the designation and management of MPAs	1	2	3	4	5	6
I know which Tasmanian marine species are endangered	1	2	3	4	5	6
I know which are the key habitats (e.g. spawning or nursery areas) for marine species in Tasmania	1	2	3	4	5	6
I know when is the reproductive season of many marine species in Tasmania	1	2	3	4	5	6
I understand the impacts of different industries and activities on marine ecosystems	1	2	3	4	5	6
I know the advantages, disadvantages and limitations of MPAs	1	2	3	4	5	6
I know roughly the magnitude of the economic contributions of each marine industry in Tasmania (major fisheries, aquaculture, recreational diving)	1	2	3	4	5	6
I know roughly how many livelihoods depend on marine ecosystems	1	2	3	4	5	6
I understand the social and economic costs of declines in marine species and ecosystems	1	2	3	4	5	6
I understand the reasons behind each stakeholder's position regarding MPAs	1	2	3	4	5	6

Currently there are enough MPAs to protect Tasmania's biodiversity	1	2	3	4	5	6
I am satisfied with the management outcomes for Tasmanian MPAs	1	2	3	4	5	6

C. In this section, we would like to know about your participation in the designation and management of Tasmanian MPAs.

8. Have you participated in any process related to Tasmanian MPAs?

☐ Yes (If yes, skip to Question 10)

☐ No (If no, go to Question 9)

9. Can you please tell us why you have not participated in any processes related to Tasmanian MPAs? *Please select all answers that apply to you.*

☐ I haven't heard about opportunities to participate

☐ I haven't had time

☐ I didn't agree with the process

☐ My participation would not make any difference to the outcome

☐ I am not interested in the outcome

Other reasons? (please list) _____ *NOW PLEASE SKIP TO QUESTION 12*.

10. In which processes related to MPA designation or management have you participated? *Please select all answers that apply to you.*

☐ Early designations (such as Maria Island, Governor Island)(1991)

☐ Davey and Twofold Shelf bioregions (2003)

☐ Designation of MPAs in the Bruny bioregion, as part of the Tasmanian MPA strategy (2008)

☐ Management decision(s) of _____ (name of MPA)

11. What was your **main** motivation to participate? *Please select all answers that apply to you.*

☐ I wanted to support the biodiversity conservation benefits of MPAs

☐ I wanted to support the social and/or economic benefits of MPAs

☐ I was worried about the negative impacts that MPAs might have on important livelihoods and commercial activities

☐ I was worried about the negative impacts that MPAs might have on recreational fishing activities

☐ It was part of my job

Other reasons? (please explain) _____

12. Next, we would like to understand your views on the quality of the past and current participation opportunities regarding Tasmania's MPAs. *Please choose one answer in each row*

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**I don't know**
There have been plenty of opportunities for citizens to participate in the designation of new MPAs	1	2	3	4	5	6
There are ongoing opportunities for citizens to participate in MPA management	1	2	3	4	5	6
Engagement methods have been appropriate to include citizens' needs and expectations in MPA decisions	1	2	3	4	5	6
My opinions or the opinions of my community/group have been considered by decision-makers	1	2	3	4	5	6
Decisions regarding MPAs clearly reflect the input of a variety of stakeholders	1	2	3	4	5	6
Decisions regarding MPAs are biased towards certain stakeholders	1	2	3	4	5	6
Government institutions clearly support their decisions with appropriate background information (ecological, cultural and socio-economic)	1	2	3	4	5	6
Decisions regarding MPAs are usually informed by the best available information	1	2	3	4	5	6
Decision-makers clearly explain how stakeholder contributions were considered and are reflected in final	1	2	3	4	5	6

decisions

The reasons for MPA-related decisions are clear	1	2	3	4	5	6
Decisions regarding MPAs are fair	1	2	3	4	5	6
Decision-making processes regarding MPAs are run by the most appropriate government bodies	1	2	3	4	5	6
I trust the independence of decision makers in charge of establishing and managing MPAs	1	2	3	4	5	6
Government institutions in charge of MPA management do the best job they can with the available resources	1	2	3	4	5	6

13. How important are the following options to improve opportunities for stakeholders to participate in decisions regarding MPAs ? *Please choose one answer in each row*.

	Not important at all	**Not very important**	**Somewhat important**	**Very important**	**Extremely important**	**I don't know**
More diverse and tailored methods that encourage participation of all stakeholders	1	2	3	4	5	6
On-going processes, instead of one-off consultations, that allow all stakeholders and government agencies to openly discuss issues and identify mutually acceptable solutions	1	2	3	4	5	6
Official processes that allow for greater stakeholder influence on decisions	1	2	3	4	5	6
Better incorporation of scientific knowledge into decisions	1	2	3	4	5	6
Better incorporation of social and/or economic infromation into decisions	1	2	3	4	5	6
Communications to stakeholders of the reasons why desicison were made, and the evidence on which they were based	1	2	3	4	5	6

Are there other ways to improve stakeholder participation in MPA decisions? _____

14. If the improvements you considered important in Question 13 were implemented, what would be the resulting benefits? *Please select one answer in each row.*

	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**	**I don't know**
Trust between different stakeholders and government agencies will increase	1	2	3	4	5	6
Acceptance of MPA regulations will increase	1	2	3	4	5	6
Citizen and stakeholder support for MPAs will increase	1	2	3	4	5	6
Decisions will be fairer	1	2	3	4	5	6
Decisions will be better informed	1	2	3	4	5	6
MPAs will have a better chance of fulfilling their objectives	1	2	3	4	5	6

Are there other consequences of improving participation in MPA decisions? _____

D. Next, we would like to know your views about the level of influence of different sectors in relation to MPA decisions.

15. From your point of view, how much influence does each sector have on MPA decisions? *There is one column for each major source of influence, namely **economic** (e.g. key source of jobs or funding), **political** (e.g. statutory or close connections to decision makers),or **informational** (e.g. knowledge used to inform decisions or capacity to manipulate/withhold certain information). From the drop-down menu in each column, please choose the level of influence.*

How much influence does each organisation have regarding MPAs?	**Economic**	**Political**	**Informational**
Government departments or agencies	No influence Less influence than most organisations As much influence as other relevant organisations More influence than most organisations	No influence Less influence than most organisations As much influence as other relevant organisations More influence than most organisations	No influence Less influence than most organisations As much influence as other relevant organisations More influence than most organisations
Public-private partnerships (such as NRM or Derwent Estuary Program)	[Menu as above]	[Menu as above]	[Menu as above]
Commercial fishers	[Menu as above]	[Menu as above]	[Menu as above]
Recreational fishers	[Menu as above]	[Menu as above]	[Menu as above]
Divers	[Menu as above]	[Menu as above]	[Menu as above]
Research organisations	[Menu as above]	[Menu as above]	[Menu as above]
Conservation organisations	[Menu as above]	[Menu as above]	[Menu as above]
Community organisations or associations	[Menu as above]	[Menu as above]	[Menu as above]
Mass media (TV, radio, newspapers)	[Menu as above]	[Menu as above]	[Menu as above]

16. Which are your sources of information on marine issues and MPAs and how much do you trust or distrust them? *In each column, please choose one option from the drop down menus.*

How much do you use and trust information on marine issues and MPAs from the following sources?	**Use**	**Trust**
Mass media (TV, radio, newspapers)	○ Never use it/them ○ Less than once a year ○ A few times per year ○ Monthly ○ Weekly or daily	○ I distrust all their information ○ I distrust most of their information ○ I trust some information and distrust other ○ I trust most of their information ○ I trust all their information ○ I don't know
Peer-reviewed publications (academic journals, books)	[Menu as above]	[Menu as above]
Bulletins/newsletters/web pages of specific organisations	[Menu as above]	[Menu as above]
Close friends and family, work colleagues or co-members of a group/organisation	[Menu as above]	[Menu as above]

17. Do you tend to agree or disagree with the views of the following groups regarding MPAs and marine conservation? *Please circle one answer in each row*.

	I strongly disagree with their position	**I mostly disagree with their position**	**I disagree on some points and agree on others**	**I mostly agree with their position**	**I strongly agree with their position**	**I am not familiar with their position**
Government departments or agencies	1	2	3	4	5	6
Public-private partnerships (such as NRM or Derwent Estuary Program)	1	2	3	4	5	6
Liberal party	1	2	3	4	5	6
Labor party	1	2	3	4	5	6
Greens party	1	2	3	4	5	6
Education organisations	1	2	3	4	5	6
Commercial fishers	1	2	3	4	5	6
Aquaculture businesses	1	2	3	4	5	6
Tourism operators	1	2	3	4	5	6
Game-fishing operators	1	2	3	4	5	6
Divers	1	2	3	4	5	6
Recreational fishers	1	2	3	4	5	6
Research organisations	1	2	3	4	5	6
Conservation organisations	1	2	3	4	5	6
Community organisations or associations						

E. In this last section, we would like to know about your organisation.

18. Do you work for, or are part of an organisation related to the marine environment and/or MPAs?
*If you belong to more than one, please choose the **most important** organisation .*

- o DPIPWE - Marine Resources Branch
- o DPIPWE - Parks and Wildlife Service
- o National Parks and Wildlife Advisory Council
- o MAST - Marine and Safety Tasmania
- o Tasmania Police - Marine Safety and Rescue
- o Department of Economic Development, Tourism and Arts
- o Tasmanian Planning Commission
- o NRM South
- o Derwent Estuary Program
- o Woodbridge Marine Centre
- o Greens party
- o Liberal party
- o Labor party
- o Tasmanian Seafood Industry Council
- o Bruny Island Cruises
- o Eaglehawk Dive Centre
- o Other dive businesses
- o Sea Charter Boat Operators of Tasmania
- o IMAS - Marine and Antarctic Futures
- o Citizen science program (RLS, Redmap)
- o IMAS - Fisheries and Aquaculture
- o CSIRO Marine and Atmospheric Research
- o Tasmanian Conservation Trust
- o Environment Tasmania
- o Birdlife Tasmania
- o Tasmanian National Parks Association
- o Friends of Maria Marine Protected Area
- o Tasmanian Aboriginal Centre
- o Tasmanian Game Fishing Association
- o Tasmanian Association for Recreational Fishing
- o Tasmanian Scuba Diving Club
- o Other Dive Clubs (please specify in "other")
- o The Royal Yacht Club of Tasmania
- o Other yacht/boating clubs (please specify in "other")

19. How long have you been a member/staff of the most important organisation you chose in Question 17?
_____ years

20. How often do you work with/attend meetings of the most important organisation you chose in Question 17? *Please tick one box*.

- ☐ Never
- ☐ I volunteer/attend meetings less than once a year
- ☐ I volunteer/attend meetings between 1 and 4 times a year
- ☐ I volunteer/attend meetings more than 4 times a year
- ☐ I am a staff member/consultant

21. We would like to understand the networks associated with the most important organisation you chose in Question 17. Please indicate your agreement or disagreement with each of the following statements. *Please circle one answer in each row*.

	Strongly disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly agree**	**I don't know**
Members of this organisation often engage with each other in social activities	1	2	3	4	5	6
Most members of this organisation trust each other						
When a problem that concerns the organisation arises, we get together to solve it collectively, rather than individually	1	2	3	4	5	6
The organisation has strong leadership	1	2	3	4	5	6
Most members have a common vision about the goals of the organisation	1	2	3	4	5	6
When a project is proposed in this organisation, it usually gets done	1	2	3	4	5	6
The organisation usually gets the necessary support (financial and other) to implement important projects	1	2	3	4	5	6

22. Again thinking about the most important organisation you chose in Question 17, with which sectors, if any, has your organisation collaborated in the past 3 years? *Please tick all boxes that apply.*

- □ Government institutions/divisions
- □ Multi-sector/multi-level groups or projects
- □ Liberal party
- □ Labor party
- □ Greens party
- □ Education organisations
- □ Commercial fishers
- □ Aquaculture businesses
- □ Tourism operators
- □ Game-fishing operators
- □ Divers
- □ Recreational fishers
- □ Research sector
- □ Conservation organisations
- □ Community organisations or associations

Would you like to mention specific organisations/groups with which your organisation has collaborated?

_____

Thank you for taking the time to answer this survey.

If you would like us to send you a summary of the results of this survey, please send an e-mail to cgarcia@utas.edu.au

If you would like to participate in an interview so that you can discuss MPA issues in more detail, please send me an e-mail: cgarcia@utas.edu.au

Appendix 3. Construct table for the questionnaire

Construct	Subconstruct	question
Personal attributes	Link to marine environment	Which activities link you to the marine environment? (list of 12 activities)
		How do MPAs affect activities? (list of 8 activities)
	Place attachment (identity and dependence) and values of MPAs.	Agreement with identity, attachment and dependence statements (List of 6 statements)
		How important is each MPA value? (list of 7 values)
Acceptance of rules	Reasons for compliance (sense of responsibility)	agreement with different reasons for following rules (authority, ethical common interest, benefits, avoid costs, social pressure, logic, participation) (list of 7 statements)
Understanding of social-ecological system	Understanding/perception of MPA system	How much you do know about the location and regulations of the following MPAs? (Table of some MPAs and level of knowledge about location and rules)
	Understanding/perception of ecosystem, socio-economic aspects and governance regime	Agreement with statements on the understanding of ecosystem socio-economic issues and governance system (table with 12 statements)
Participation in relation to good governance principles	Participation experience	Have you participated? (Yes, No)
		If not, reasons? (list of options)
		Can you recall in which opportunities you participated in a process related to MPAs designation or management? (3 options)
		What was your main motivation to participate? (3 options)
	Quality - good governance (frequency, adequate, fairness, objectivity, transparency and accountability, legitimacy, performance, effects)	Agreement with statements about quality of past and current participation opportunities regarding Tasmania's MPAs (frequency, adequate, fairness, objectivity, transparency and accountability, legitimacy, performance, effects) (11 statements).
		How would you improve the participation opportunities regarding MPAs decisions? (6 statements)
		Possible consequences of improving participation opportunities regarding MPAs? (7 statements)
Organisation attributes	Organisation/activity linking to marine environment	Do you work or are part of a group or an organisation related to the marine environment and/or MPAs? (drop down menu, choose the most important)
		How long have you been a member/staff of this organisation? (_____ years)
		How often do you work for/attend meetings of this organisation?
	social capital organization (solidarity, trust, internal and external links), leadership and agency	Agreement with statements about social capital of organisation (solidarity, trust, social interactions within, social links outside), leadership and agency (7 statements)
	Social network analysis	From the following organisations, with which one has your organisation cooperated in the past 3 years? (12 sectors list)
		From the following organisations, how much do you tend to agree or disagree regarding MPAs and marine conservation? (list 14 sectors)
Power	information	Which are your sources of information on marine issues and MPAs and how much do you trust or distrust them? (4 sources-trust level)
	influence	how much influence does each of these organisations have on MPA decisions? (list of organisations)

Appendix 4. Interview schedule

1. Which is the relation and position of your organisation regarding MPAs?
   - What are the benefits of having MPAs?
   - What are the problems or impacts of MPAs?
   - What do you think about the current MPA system in Tasmania (state waters)?

2. Has your organisation engaged in any processes for MPA management or designation in Tasmania?
   - Which processes?
   - What was the form of engagement?
   - What was the result?

3. Do you think that the decision-making processes regarding MPAs have been appropriate?
   - What could be improved and how?

4. With which organisations have you exchanged information about MPAs or marine conservation? (List of organisations)

5. Which organisations do you think influence MPAs decisions?
6. Which organisations influence decisions:
   - based on their capacity to disclose, withhold or manipulate information?
   - based on relevant and accurate knowledge?
   - due to their economic influence? (as an important source of employment in the state or as an important source of funding of programs that affect MPAs)
   - based on their political positions or connections?

7. Are you aware of any coalitions regarding MPAs?

Definitions used during interviews:

Influential: Actors with a demonstrated capacity to:

1) shape ideas about policy/management,
2) initiate policy/management proposals,
3) change or veto others' proposals,
4) make decisions
5) affect implementation

Coalitions: Organisations that deliberately get together to unify and strengthen their position in relation to specific policy issues.

Sources of influence:

1) Political: Statutory powers; close connections to decision makers; electoral pressure.

2) Economic: Source of funding; source of jobs; financial capacity for lobby.
3) Information: Capacity to present, withhold or manipulate information to affect public perceptions; use of sensitive information to manipulate people/organisations; capacity to build credible arguments.
4) Expert reputation: Trusted scientists/research institutions; people/organisations with a reputation of good negotiators; knowledgeable people/organisations in relevant fields.

Appendix 5. Matrix of main organisations used during interviews

sector	subsector	organisation	Information exchange	influence level	Source (Political, economic, information, expertise reputation)	Coalitions
Political parties		Greens				
		Labor				
		Liberals				
Politicians/Ministers		Houses of Parliament				
		Minister for Environment, Parks and Heritage				
		Other Ministers				
Planning		Tasmanian Planning Commission				
Government institutions/divisions	**Fisheries and aquaculture**	DPIPWE - Marine Resources Branches				
		Fisheries Advisory Committees				
	Conservation	DPIPWE - Parks and Wildlife Service				
		National Parks and Wildlife Advisory Council				
	Surveillance and compliance	MAST - Marine and Safety Tasmania				
		Tasmania Police - Marine Safety and Rescue				
	Tourism	Department of Economic Development, Tourism and Arts				
Multi-sector/multi-level groups or projects		NRM South				
		Derwent Estuary Program				
Education and research organisations		IMAS				
		CSIRO				
		University of Tasmania (other depts./centres)				
		Woodbridge Marine Centre				
		High Schools				
Commercial fishers	**Aquaculture and**	Tasmanian Seafood Industry Council				

	Fishing Industry	Sector groups (Rock Lobster Fishermen's Association, Abalone Council, Commercial divers, Scalefisherman association)				
Tourism	**Tourism operators**	Bruny Island Cruises				
	Diving operators	Eaglehawk Dive Centre				
		Other (Southern Ocean Sport, etc)				
	Game-fishing operators	Sea Charter Boat Operators of Tasmania				
Conservation organisations		Tasmanian Conservation Trust				
		Environment Tasmania				
		Ocean Planet				
		EDO Tas				
		Other (please specify)				
Recreational fishers		Tasmanian Association for Recreational Fishing				
		Gamefishing clubs				
Divers		Diving Clubs				
Media		(Newspapers, TV, radio) please specify				
Other		(e.g. Boating/sailing clubs, local coastal communities) please specify				

Appendix 6. IUCN management categories:

(Dudley, 2008)

Ia Strict nature reserve: Strictly protected for biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are controlled and limited to ensure protection of the conservation values.

Ib Wilderness area: Usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, protected and managed to preserve their natural condition.

II National park: Large natural or near-natural areas protecting large-scale ecological processes with characteristic species and ecosystems, which also have environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

III Natural monument or feature: Areas set aside to protect a specific natural monument, which can be a landform, sea mount, marine cavern, geological feature such as a cave, or a living feature such as an ancient grove.

IV Habitat/species management area: Areas to protect particular species or habitats, where management reflects this priority. Many will need regular, active interventions to meet the needs of particular species or habitats, but this is not a requirement of the category.

V Protected landscape or seascape: Where the interaction of people and nature over time has produced a distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected areas with sustainable use of natural resources: Areas which conserve ecosystems, together with associated cultural values and traditional natural resource management systems. Generally large, mainly in a natural condition, with a proportion under sustainable natural resource management and where low-level non-industrial natural resource use compatible with nature conservation is seen as one of the main aim